

CYBORGS AND CLONES:
PRODUCTION AND REPRODUCTION OF POSTHUMAN FIGURES
IN CONTEMPORARY BRITISH LITERATURE

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by

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ABSTRACT OF DISSERTATION

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As a replacement for, or supplement to, the human, the posthuman produces figures that highlight the socially constructed nature of human identity. This dissertation undertakes to demonstrate how several British novelists have used the concept as a supplement or replacement for the human in order to re-imagine the experience of the outsider. It argues that the importance of the posthuman is not its portrayal of a potential utopian or dystopian future or change for the human, but in how the posthuman draws our attention back to how we define ourselves as “human.” Fictional posthuman figures differ from the human both in degree (like clones, whose origins differ from the ordinary) and in kind (like cyborgs, whose prosthetics often mark them as radically different from ordinary humans). Yet these posthumans often act in ways indistinguishable from everyday humans, suggesting that the idea of a natural human is a social construction. This dissertation argues that there are three antinomies that inform these posthuman narratives: the organic and the mechanical, the body and human consciousness, and genetic determinism and cosmopolitan multiplicity. Through these antinomies, posthuman figures function as metaphors or allegories for colonial and racial tensions. More often than not, the posthuman other is marginalized, inviting figurative comparisons with more traditional marginalized groups, so that the narratives of conflict with, or oppression by, a dominant group can act to represent the conflicts over multiculturalism and belonging that continue to plague post-imperial Britain in the twenty-first century. The dissertation applies the three antimonies to texts by Zadie Smith, Kazuo Ishiguro, Salman Rushdie, Ian McEwan, Ken MacLeod, Amitav Ghosh and Justina Robson, exploring how those antinomies play out in diverse genres such as science fiction, realist fiction and magical realism to suggest that the posthuman can find expression in a wide range of literatures.

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INTRODUCTION: Producing and Representing Posthumans

Why, you might ask, should we care how other people think and feel about stories? Why do we talk about them in this language of value? One answer is just that it is part of being human. People tell stories and discuss them in every culture, and we know they have done so back as far as the record goes.... We wouldn't recognize a community as human if it had no stories, if its people had no narrative imagination.

Kwame Anthony Appiah *Cosmopolitanism*

Words, languages, laws, sciences, and the fine arts have come, and by them finally the rough diamond of our mind has been polished. Man has been trained in the same way as animals. He has become an author, as they have become beasts of burden.

Julien Offray de La Mettrie *Man A Machine*

To declare that human beings tell stories seems banal. Yet in the context of debates and discourses about the posthuman, it may be useful to consider the role of storytelling and narrative in the social construction of human communities. Narrative imagination allows authors to consider how a community of humans might not only be distinguished from animals as Julien La Mettrie suggests, but also from the posthuman. Posthuman figures, beings commonly characterized as a “union of the human with the intelligent machine” (Hayles *How We Became Posthuman* 2), are always differentiated from the human, sometimes in degree and sometimes in kind, and narrative becomes a means of defining and constructing the posthuman as well as

redefining the human. Because the production and reproduction of posthuman figures is predicated on their distinction from the human, narratives of the posthuman require a re-evaluation of the human as well.

In *The Inhuman: Reflections on Time* (1991), Jean François Lyotard suggests that “any material system is technological if it filters information useful to its survival, if it memorizes and processes that information and makes inferences based on the regulating effect of behavior, that is, if it intervenes on and impacts its environment so as to assure its perpetuation at least” (12). Imagining the human body as one of these technological material systems, as visions of posthuman futures often do, puts the human on a continuum with any other similar material systems that interacts with their environment – including cyborgs and robots.¹ Lyotard’s examination of the “inhuman” suggests that the inhuman may be constructed as an opposition to the human; however, this opposition is also challenged by Lyotard’s suggestion that humans might survive the death of the solar system because the human and inhuman interact with their environment in similar ways, with similar drives to survive. This potential common drive for survival shared by the human and the inhuman (or the human and posthuman) threatens to decenter the human subject in narratives of future technological developments. To maintain a distinction between human and inhuman would require constructing an opposition between the artificiality of the cyborg, robot, or genetically-altered human (clone), and the natural, organic, and thus “original,” human. The notion that the human is natural and the cyborg or clone artificial runs through commonsense definitions of the two categories that Lyotard labels the

¹ The cyborg is a shortened form of “cybernetic organism,” and cybernetics is “the theory or study of communication and control in living organisms or machines” (OED). Cybernetics, which is a communication theory at heart, has refined the interaction of the elements within the set (organism or combination of organism-elements) such that they disrupt existing structures. The robot is “a machine (sometimes resembling a human being in appearance) designed to function in place of a living agent” whose etymology can be traced to the Czech word *robota*, meaning forced labor, first used by Karel Kapek in his play *R.U.R.* (‘Rossum's Universal Robots’) (1920) (OED).

human and the inhuman. But this opposition becomes troubled when contemplating twenty-first century biotechnologies because of the way in which many of the technologies that manipulate the human body mimic natural processes of that body.

The epigraph from Appiah that introduces this project is firmly humanist in its depiction of the fundamental primacy of narrative in our understanding of others as human individuals and communities. This might lead one to ask how narrative offers a means for comprehending the human and constructing our understanding of ourselves as human beings, particularly in a technological context like that suggested by Lyotard, in which the very notion of the human is challenged by the inhuman. This dissertation undertakes to demonstrate how several British novelists have used the concept of the posthuman as a supplement for, or as a replacement of, Lyotard's human/inhuman in order to envision the experience of the outsider. The posthuman can signal that its prefix *post-* means "after" and that it can also mean "beyond." The posthuman can be the kind of human that follows the *Homo sapiens* we are at present through a next evolutionary step (just as *Homo sapiens* evolved from *Homo erectus*), whether that step is biological or technological (perhaps the new humans would be called *Homo sapiens technologensis*?) The posthuman can also be that which transcends the limitations of the human where the human character is retained, not made obsolete, but its features modified.

Within the novels under discussion, posthuman figures, including cyborgs and clones, are used figuratively to stand in for the Other. More often than not, this posthuman other is marginalized, inviting figurative comparisons with other traditionally or historically marginalized groups, so that the narratives of conflict with, or oppression by, a dominant group can act to represent the conflicts over citizenship, nationhood, and belonging that continue to plague post-imperial Britain in the twenty-first century.

Three Posthuman Antinomies

Human relationships with posthuman biotechnologies take a number of forms, including fictional representations of those relationships. Sometimes technology is the embodiment of a tension between competing ideals that will have different and far reaching effects for the human characters in the story. Sometimes technology is a primary component of the narrative, as it often is within a genre like science fiction. Sometimes technology is simply part of the background of a realist narrative that nevertheless plays a role in the unfolding drama of the story. Sometimes the characters are humans (or posthumans) trying to manage the technology in their lives, while sometimes the characters are created by technology, as is the case for cyborgs and clones within a story's narrative.

In a number of novels of the late twentieth and early twenty-first century that employ the figure of the cyborg, clone, robot, or genetically-altered human, the plot often relies upon a decision being made regarding the humanity of such characters. However, even in texts without such apparently “inhuman” beings, the tension between the artificial and the natural that emerges in the wake of technologies like genetic engineering, bio-informatics, genomics, and nanotechnology challenges more traditional notions of human identity and subjectivity. This tension may be intense or relatively mild, but in either case the literature inevitably asks the question it has asked for centuries, “What does it mean to be human?” This question is not new, nor is it confined to literature; one way to understand the limits of the human and the establishment of boundaries that fix the human in one place, and the non-human, can be through conflicts between humans in various contact zones. What we have come to identify as postcolonial, or commonwealth literature, or even literature of the “contact zone,” is full of

conflict between those who control and those who are controlled, between those who believe they have the right and power to define who is a citizen with full participatory rights and powers and those who suffer because of that definition.² Similarly, there are significant correlatives between the anxieties expressed in narratives of contact between humans of different cultures and the anxieties expressed in novels using the posthuman figures of clones and cyborgs. The emerging technologies of the twenty-first century, such as genetic engineering, robotics, and artificial intelligence provide a new set of figures through which the age-old questions of who belongs and who does not can be imagined, albeit a set of figures that go beyond simply challenging the constitution of any given human community to challenging the definition of the human itself.

The conflict that emerges from engaging with posthuman figures like cyborgs and clones, as well as the emergent technologies that produce such figures, gives rise to three antinomies that trouble, rather than resolve the status of the human in literatures of the posthuman. The first and most obvious opposition is between the organic and the mechanical, an opposition that produces the “tight coupling” of machine and flesh that Donna Haraway identifies as both disturbing and celebratory in “A Cyborg Manifesto.” The integration of artificial, mechanical components into the human body challenges definitions of the human that rely upon its “natural” status.

The second antinomy modifies the traditional Cartesian dualism of mind versus body by distinguishing instead an opposition between the physical mind *as it arises out of the physical*

² The terms used to describe such literature of conflict are often contested by those who read and even those who write the literatures that are often claimed by such terminology. Amitav Ghosh, whose novel *The Calcutta Chromosome* (1995) is discussed in the fifth chapter, rejects the label of ‘postcolonial’ writer, while Salman Rushdie, whose work is discussed in the fourth chapter, famously suggested in the essay by the same name that “Commonwealth Literature Does Not Exist” (1983). Mary Louise Pratt’s idea of “contact zones”, which are “social spaces where cultures meet, clash, and grapple with each other, often in contexts of highly asymmetrical relations of power, such as colonialism, slavery, or their aftermaths as they are lived out in many parts of the world today” (6107) comes closer than the other labels to identifying the kinds of relationships which characterize such literatures, including the potential for both productive and destructive interactions.

body and the more ephemeral mind or consciousness (sometimes identified as a unique human ‘spirit’). In the development of computers, artificial intelligence and robotics, we find emerging a contested ground between the artificially enhanced or created mind and/or body and the consciousness (sometimes imagined as the human soul). The mechanical human challenges the “natural” human by replacing both the natural mind and the body, so that visions of the human in a posthuman era often resort to appeals to emotions or the soul as the seat of human uniqueness.

The third antinomy emerges out of genomics in an essentialism that is predicated on an assumption that evolution and the genetic code (DNA) play a crucial role in the construction of the human. With the discovery in the twentieth century that genes control the development of the biological human, some scientists proposed that genes might also control complex human behaviors. While this view is neither universal nor palatable for a liberal humanist, some scientists began to search for genes that control complex behaviors (e.g. the ‘gay’ gene reportedly discovered in 1993).³ The completion of the Human Genome Project in 2003 has led to a resurging belief in genetic determinism, which suggests that our genome is a significant (or, in its extreme forms, the primary) factor that dictates what kind of person we will develop into. This biological determinism is opposed to a kind of cosmopolitanism or autonomy in human agency, which imagines that individuals are not bound by the circumstances of their birth, but that their experiences dictate how they develop.

In the context of postcolonial studies, this kind of cosmopolitanism is often described as “rootless cosmopolitanism,” which Salman Rusdie describes shaping experience so that “our

³ The report of a ‘gay gene’ is just one of many pronouncements by a branch of genetic science: behavioral genetics, which seeks to find genetic bases for complex human behaviors. Within the scientific community there is considerable debate about whether it is possible to trace any human behavior to genetic markers, let alone the complexity of human sexuality. Despite Dean Hamer’s work (published in 1993 in *Science*) that suggests there is a correlation between sexual behavior and genetics, there is no consensus in the scientific community that such a connection can be made. The novels under discussion here seem also to overwhelmingly suggest that human behavior is too complex to be reduced to genetic factors.

identity is at once plural and partial. Sometimes we feel that we straddle two cultures; at other times, that we fall between two stools” (“Imaginary Homelands”15). Sharon Marcus suggests in her discussion of universal human experience that a transnational cosmopolitanism is both universal and particular, so that the case of the individual, as we will see in Kathy H.’s narrative in *Never Let Me Go*, can be understood as particular as well as universal of the human experience. In either case, cosmopolitanism as an indicator of our personal histories, can act as a counter to the genetic determinism in defining who we are as individuals. These three antinomies shape the kinds of conflicts between human and posthuman figures in the literature of the late twentieth and early twenty-first centuries which will be examined in this project.

I’d like to share a mis-reading of a passage about genetic engineering and assisted reproductive technologies (ART) in order to demonstrate how the natural and the unnatural (or the human and the posthuman) are created, semiotically and generically, in both fictional and non-fictional texts. The misreading took place upon encountering the following passage in Bruce Mazlish’s *The Fourth Discontinuity: The Co-Evolution of Humans and Machines*:

Superovulation, ova and embryo implants, and possibly cloning are all different approaches to reproducing superior animals. The first three methods involve sexual reproduction, *and therefore surprises and uncertainties*. Cloning, in contrast, is asexual and should result in a perfect replication of an individual. (168; emphasis added)

As I read the passage, I anticipated the opposite sentiment within the italicized material, first reading the passage as “...therefore, *no* surprises and uncertainties,” until I realized upon re-reading that I had read a negative into that sentence. The result of sexual reproduction the old fashioned way (even if assisted by technology) is characterized in this passage as surprise, and this suggestion of surprise invites us to consider its opposite: control. In this way, the “control”

that cloning or other genetic engineering technologies offers would eliminate surprises. What Mazlish is talking about in sexual reproduction is that one can not know the combinations that emerge from the union of a given egg and sperm, whereas cloning will produce a perfect duplicate. In the individual case, this is the way it works, certainly. But the reason I initially anticipated a negative in that middle sentence, that we would *not* be surprises and uncertainties in reproductive technologies, is that they assist the kind of reproduction the human species has been undergoing for the entirety of its existence while the kind of control of reproduction offered by cloning is something new.

Certainly, unpredictability at the level of the genome will reveal itself in bodies and individuals whose appearance and features might be unexpected. But the union of sperm and egg, a “natural” process which has yielded incredible variation, will still produce those individuals. In our enlightened twenty-first century, we like to think that we can overlook radical departures from the norm of the human body’s appearance to still include such individuals in the category of “human.” At the sociological level, reproductive variation in natural conception or even as a result of assisted reproductive technologies (ARTs) is itself an expected consequence. It is when we turn to cloning that this situation is reversed. The expected result – of a perfect replica of the human – is what seems most inhuman in social reactions to the situation. In contemplating the difference between the “natural” and the “artificial” in reproduction, the unpredictability and lack of intervention in natural reproduction, although it should produce anxiety because of its inherent “surprises and uncertainties,” is the mode that is most familiar. This instance of misreading reveals one of the fundamental issues at the heart of technologically-mediated difference: what was once thought-of as a natural process, largely only controlled by human behavior and folk wisdom is now one that can be controlled by reproductive

technologies. The natural, surprising human produced through biological reproduction becomes the unnatural, predictable posthuman produced by technology. This predictable form of the posthuman does not, however, automatically translate to a smooth integration into the cultural body of humanity. Visions of a posthuman future, whether in literature or social science, do not agree on what that future will look like. This is in part because they do not agree on what the posthuman will look like or what technologies it will employ. But it is also because the different forms of technologies emphasize to greater and lesser extent some of the ways in which the posthuman differs from the human.

The Metaphorical Posthuman

In the twentieth century there is a shift in general attitudes toward technology from one in which technology is distinctly different from humans and controlled by them (for good or ill) to one where technology is imagined as being able to mimic the human.⁴ Thus the human body became a model for technology, not simply imagined to be the end user. One of the real social and linguistic effects of twenty-first century technologies is how they introduce new metaphors to describe their effects, particularly as that technology affects humans (or posthumans). As science develops the potential to create clones and cyborgs, these technologies become metaphors that allow us to ask questions about what it means to be human. In addition to new metaphors, in the twenty-first century there is a perception that literature and science have little to say to each

⁴ The metaphors of the cyborg, a mimic of the human, are not new, even if the science that helps to create posthuman figures is. Allison Muri suggests that the Cartesian mind/body dualism that pervades metaphors of the posthuman arose out of a lack of “specific terms and crucial knowledge of atomic and molecular structures” of the brain in the Renaissance. Thus, “the relationship between cyborg hardware (the body itself) and cyborg software (the steering or programming of body-mind functions), is both a metaphoric and a material outcome of the gradual refinement of those early definitions of matter, mechanic, mind, and body” (43). In other words, the language used to define the cyborg, and the metaphor of the cyborg itself, rests upon changing knowledge generated by the science of biology.

other. However, the division between literature and science is being challenged by several writers' recognition that the overlap between the two disciplines is neither trivial nor unimportant.⁵

One of these writers is Susan Squier. She suggests that literature is an appropriate vehicle through which to approach science and technology because neither science and technology nor literature are monolithic, stable categories that have clearly defined boundaries that never overlap; it is only disciplinarity that has suggested a division between the two. Pointing to the publication of *Children of Men* and a British Medical journal article in 1996 about falling fertility rates, Squier refuses to call this focus on fertility coincidence; rather, both the novel and the scientific article emerge from the same anxieties of that cultural moment. Thus

Rather than accepting as natural that some aspects of the material world fall under the purview of science and some under the purview of literature, we realize that this division into scientific and literary objects of knowledge is constructed as the solution of a past controversy over disciplinary realms and regimes. There is nothing inherently literary or scientific, only what disciplinarity makes so. (46)

What Squier intends to emphasize is that there is nothing within the realm of science that is not available to literature as its subject, that there are no subjects that only science can talk about, or only literature can talk about. As an example of this interdisciplinarity, Squier adopts the term "liminal lives" – lives having characteristics that are simultaneously human and not human –

⁵ The increasing split between what is perceived as the language of science and that of literature was outlined first in C.P. Snow's "Two Cultures and the Scientific Revolution" lecture in 1959. Snow's call to harness both disciplines in the solution of the world's problems, specifically poverty, has been heeded by some who echo his sentiment that science and literature need not fail to communicate with each other. In particular, feminist theorists of science recognize the need for cooperation to solve these kinds of problems, and further point to the similarities between the disciplines that have been ignored in over a century of effort at distinguishing them one from the other. There are also many examples of fruitful interchange between the two disciplines that have fueled research and discovery. Humberto Maturana, whose *Autopoiesis and Cognition* is a key text in artificial intelligence describes how he came up with the term 'autopoiesis' after hearing a colleague talk about the literary example of Don Quixote's dilemma in being caught between praxis and poesis (Maturana xvii).

when referring to the tissues involved in *in vitro* fertilization (eggs, sperm and stem cells). These liminal lives represent an exchange of ideas about what constitutes life generally, and what constitutes human life more specifically. The ambivalence within liminality then transfers to the technologies themselves through the metaphor. She extends the metaphor: “I view human beings living in the era of these biomedical interventions as liminal ourselves, as we move between the old notion that the form and trajectory of any human life have certain inherent biological limits, and the new notion that both the form and the trajectory of our lives can be reshaped at will” resulting in “destabilizing consequences that reach from our cultural analysis to our medical practices, shifting the very ground of our being” (9). Squier explains that science expresses the excess of fantasy and desire that cannot be contained within its purported objectivity through metaphor and imagery and in return, imagery borrows from scientific discourse in its expression within culture. Narrative is the means by which biomedical technologies are understood by the reader while at the same time narrative constitutes those same technologies in its description of them (15-16).

Squier also suggests metaphor is critical to representations of science and technology because “through the vehicle of image, genre, character, and plot, literary and paraliterary texts help us set the boundary conditions for human life” so that the experience of these representations constructs identity and “shapes both the symbolic and the material realms as new kinds of life stories both catalyze and confirm new beginnings and endings” (62). The liminal lives of which she writes are representations of human life and these literary representations define who we imagine ourselves to be. They are also vehicles through which we can imagine

new options for humanity.⁶ The options we imagine may include progressive images of better humans like we find in medical therapy or transhumanist manifestos.

Science as a discipline uses metaphor because most of what science deals with strains human comprehension because it is too big, too small, too complex, or our senses cannot perceive it (Lewontin 3). There is a lot at stake in the use of metaphors like the figures of the clone and the cyborg. These figures are not only shaped by the social situations in which they are found, but the metaphors that surround them also shape the scientific understanding of those technology's potentials. In practical terms, "shared metaphors can help define social groups and their boundaries" (Saffer 11), by "accounting for our perspective on the world: how we think about things, make sense of reality, and set the problems we later try to solve" (Schon 254). Donald Schon's claim in "Generative Metaphor" that problems are what generate the metaphoric frames by which we solve such problems accepts the premise that different metaphors frame problems in differing – sometimes conflicting – ways. The strength of a metaphor lies in this ability to support multiple, or rich interpretive responses, what Max Black calls "resonance" (27). In these kinds of strong metaphors, the two elements of the metaphor, say, "cyborgs" and "machines" implicate each other through a parallel construction of their features. In the example, the characteristics of machines – tools, dangerous, artificial – are assigned to cyborgs. But metaphor also masks dissimilarities between objects, so that there are elements of cyborgs – autonomy, intelligence, human-like features – that do not correspond to features of the other element in the metaphor. As Black points out, the tension between the two elements of the

⁶ This imagining happens not only within the metaphors of literature, but within broader social conversations about emerging technologies. Edna Einsiedel describes an increase in awareness about cloning as a biotechnology after the creation of Dolly, the first large cloned mammal, that was created by the media's use of literary predecessors: "Although it is tempting to simplify the impact of media coverage, stories on Dolly drew heavily on images, metaphors, and representations from popular culture already resonant with audiences, such as 'Brave New World,' 'Jurassic Park,' 'armies of clones,' Ira Levin's 'Boys from Brazil,' and Frankenstein" ("Cloning" 944).

metaphor, “can sometimes generate new knowledge and insight by *changing* relationships between the things designated” (37). This new knowledge is only created when a metaphor is still actively producing a tension between different interpretations of it. Without the tension between conflicting frames created by the metaphor, it no longer is productive of change or capable of creating a cognitive challenge for the reader.

George Lakoff and Mark Johnson conceptualize metaphors as being grounded in the embodied experience of the humans who create metaphors. The idea of the embodied nature of metaphors is so pervasive that Rodney Brooks goes so far as to propose that humanoid robots, built in the image of their human creators, will develop metaphors for representing the world that are rooted in their bodies in the same way humans use metaphor (57). For Lakoff and Johnson, human thought processes are metaphorical so that “the human conceptual system is metaphorically structured and defined” (6).

Conversely, as we see in stereotyping and other cognitive structuring, metaphors can become dead when they no longer produce any tension between alternate views. Hayles notes that

a metaphor is vital only for as long as the relation is problematic - that is to say, as long as similarity and difference are both perceived to be present. When differences in the relation have been so successfully suppressed through use and habit that they are no longer capable of putting a torque or, as Ricoeur says, a ‘twist’ on our understanding of the concepts, the metaphor is dead. (“Self-Reflexive Metaphors” 209-10)

The danger Hayles identifies in dead metaphors is that they lose the tension between opposing figures so that they both look exactly alike.⁷ The risk in assuming that the “cyborg is machine”

⁷ The consequences of these kinds of metaphors can be seen in the history of biological and racialist theories in nineteenth century pseudoscience, some of which survive into the twenty-first century in the form of genetic

metaphor is self-evident would lead us to ignore how cyborgs are not machines, so that we then overlook the potential inherent in a continued tension between the two terms.

As we have seen, a problem emerges when the metaphor becomes so pervasive and commonplace that we forget it is a metaphor. As Max Black notes, metaphors generate new ideas, but they also mask dissimilarities within the metaphor. For example, a common metaphor in biology is that DNA is information. This metaphor has been useful in allowing scientists to imagine how to use genetic information in the management of disease, or even to understand how heritable traits are transmitted. But imagining DNA as information, as a “blueprint” for an organism, ignores how that blueprint is altered as the organism develops within a given environment.⁸ The role of environment does not fit into the metaphor of DNA as information, and the kind of genetic determinism already mentioned sets in, which in its extreme suggests that genes, and only genes, determine what kind of organism develops.

Judith Roof also objects to the claim that DNA is a metaphor because problems occur “when we carelessly believe that language is transparent.” She declares that “DNA is not a metaphor, but a symptom, a pretext, an opportunity for certain kinds of cultural work to be done, certain assuagements to be had, an invitation to a kind of familiarity that crosses traditional ‘disciplinary’ boundaries and brings us back to the delusion of a controlling comfort” (“Re: a book, dna and code”). Conceptualizing DNA as performing a kind of cultural work rather than

determinism. Joseph L. Graves’ *The Emperor’s New Clothes* provides an excellent history of the development of some of these pseudoscientific theories and their effects on social constructions of belonging and inclusion. Similarly, Nancy Stepan describes how in the eighteenth and nineteenth centuries, race and gender were so often conflated that the correlation between the elements of the metaphor: “women are lower races,” became so self-evident that the differences between the two were ignored. The analogy was so widely adopted that evidence was “discovered” to support it without a search for evidence that might contradict it (271). Anthropology and biology in the nineteenth century drew from common cultural metaphors so that the Black became identified with the ape, criminals with savages, and women with “lower” races, and because these metaphors were seen to be so commonplace, the evidence that scientists found supported these metaphors.

⁸ The science of epigenetics is designed to recognize this very problem with the metaphor of DNA as information. In epigenetics, scientists seek to understand the complex interaction in the development of an organism between its genetics and its environment, including the micro-environment present during gestation as well as postpartum.

functioning simply a metaphor, keeps the features that might otherwise be masked in a metaphor present to mind and maintains metaphorical tension. It keeps focus on the opaqueness of language and its ability to obscure while it simultaneously enlightens, something that science's frequent claim to transparency in language ignores.

Figurative language becomes important in scientific and literary discourses about future human forms because metaphors can use the human body as a means for understanding complex or new ideas or objects. For example, contemplating an idea might be described as “chewing” or “disgesting” it, just as a mechanical extension that can grasp is described as an “arm.” Just as Rodney Brooks can propose that robots will develop metaphors based on their bodies, “it’s appropriate to take the body as model in the manufacture and programming of artificial intelligence if it’s intended that artificial intelligence not be limited to the ability to reason logically” because the logic of thought depends on the spatial and temporal location of the body (Lyotard 16). Thus figures of alternate humans, including genetically engineered creatures that challenge conventional ideas about the human, provide an excellent testing ground upon which we can imagine, or re-imagine, what it means to be human.

In addition to metaphor, the posthuman also invites allegorical readings in which cyborgs and clones stand in for oppressed or marginalized identities. While recognizing that many theorists of the posthuman have suggested means by which gender relations might be understood through narrative of the posthuman, when relevant in this project, I have chosen to limit myself primarily to discussing racial allegories of the effects of technologies on literary representations of the posthuman. In part this choice emerges from the nature of texts chosen for analysis, which tend to frame conflicts among or between groups of posthumans in national or ethnic terms, but also because the allegories in the novels examined are most often represented as conflicts

between groups of people so that they operate at the level of the marginalized or racialized group rather than through gender relations, which are more frequently individualized.

This is not to say that gender is unimportant to the construction of the posthuman. As writers like Katherine Hayles, Donna Haraway, Anne Balsamo and others have demonstrated, gender is implicated in figures of the posthuman, and remains an important feature of the discourse.⁹ While the effect of gender on constructions of the posthuman is addressed at appropriate points during the project, it may fall short of some reader's expectations. There has been a great deal of excellent scholarship by those scholars mentioned above, as well as many others, on gendered analysis of the posthuman that is available for the reader to consult. There has been less work on race as an organizing feature of posthuman discourse, so that in addressing the ways in which the posthuman operates as an allegory for racial, or national, or ethnic conflict, this project hopes to contribute additional ways to explore how group divisions of these sorts can be used as a source for analyzing literary representations of the posthuman.

⁹ There is a great deal of excellent research on the intersection of gender and the posthuman, such as N. Katherine Hayles's *How We Became Posthuman* (1999) and *My Mother was a Computer* (2005), both of which include excellent discussions of women's access (or lack of access) to technology. Donna Haraway's writing, from "The Cyborg Manifesto" (1985) through *Modest_Witness* (1997) is intimately concerned with the ways in which technology affects all manner of social relationships, including gender. Anne Balsamo's *Technologies of the Gendered Body* (1996) and Thomas Foster's *The Souls of Cyberfolk* (2005) provide literary and social examples of the way in which gendered bodies intersect with discourses of technology to challenge posthuman notions of homogenous posthuman bodies, while Diana Relke's *Drones Clones and Alpha Babes* (2006), as its title suggests, explores the ways in which humanist, and thus to some extent posthumanist thought, tends to ignore gendered bodies by examining the Star Trek franchise.

A Taxonomy of Posthuman Literatures

As Kwame Anthony Appiah suggests, humans are storytelling creatures, so it is instructive to consider how genre can affect the construction of posthuman figures.¹⁰ Northrop Frye suggests that the novel, for him a realist mode of narrative, cannot accommodate the supernatural; that is the province of the romance (*Anatomy* 304). Frye also suggests that within narrative “the realistic tendency moves in the direction of the representational and the displaced, the romantic tendency in the opposite direction, concentrating on the formulaic units of myth and metaphor” (*Secular* 140). Frederic Jameson’s extends Frye’s description of the romance by claiming that the romance is the “ultimate source and paradigm of all storytelling” that displaces evil from a character to “the ‘realm’ [or world] of sorcery and magical forces” (*Political Unconscious* 105, 119). If we read the ‘sorcery and magical forces’ as any kind of force not recognizable in the extratextual world, then the speculative fictional genres of science fiction, fantasy, horror, and magical realism are romance.¹¹ Similarly, as Frye suggests, the romance postulates a world in which “the ordinary laws of nature as slightly suspended,” so that the fantastical extension of scientific and technological possibility that the cyborg and clone present for our contemplation certainly seem to belong to this genre. The romantic tendency toward metaphor, or other figures of speech like allegory, would seem to be the mode in which cyborg and clone narratives would most comfortably belong.

¹⁰ The one constant in the study of literary genres seems to be the ever changing and contested definitions of genre as theory responds to the expanding range of texts within a given genre. Definition thus becomes difficult, if not impossible; as Yuri Tynanov explains, “mathematics is built on definition, whereas in theory of literature definitions are not the foundation, but only the after-effect which is, moreover, constantly being altered by the evolving literary fact” (30). Despite this difficulty, an examination of some theory regarding genres will begin to reveal some ways in which genre responds to the changing nature of human storytelling.

¹¹ Certainly the nineteenth century term ‘scientific romance’ that was first applied to what we now call science fiction suggests itself as a kind of terminological bridge between the romance and speculative fiction like the kind mentioned here.

Jameson further suggests that “in the shrinking world of today, indeed, with its gradual leveling of class and national and racial differences, it is becoming increasingly clear that the concept of evil is at one with the category of Otherness itself” (“Magical Narratives” 140) and that romance organizes space in order to present a particular moment or larger vision that “cannot be symbolically unified” (*Political Unconscious* 111-13). Literary visions of the posthuman represented in this project certainly seem to fit the bill of a vision that cannot be symbolically unified. The romance as the literature of ‘Otherness itself’ offers the possibility of other “historical rhythms” than late capitalism according to Jameson, so that the romance becomes a “place of narrative heterogeneity and of freedom from that reality principle to which a now oppressive realistic representation is the hostage” (*The Political Unconscious* 104). Imagining the posthuman requires both freedom from that “reality principle” and a place where the “narrative heterogeneity” of various fictional genres can operate.

The power of Jameson’s reality principle is pervasive, which means that romance as a literature of Otherness struggles for representational position. In “What is a Minor Literature?” Gilles Deleuze and Felix Guattari provide a description of “minor” literature that seems to echo the narrative heterogeneity Jameson describes. For Deleuze and Guattari, “minor” literature has three characteristics: it is written by a minority using a major language; everything in it is political; and it is collective in nature. Thus minor literature does not designate “specific literatures but the revolutionary conditions for every literature within the heart of what is called great (or established) literature” (168). What Deleuze and Guattari suggest is that minor literature is a “deterritorialization” of language, a means of escaping the oppression of language “to find points of nonculture or underdevelopment, linguistic Third World zones by which a language can

escape” (171), suggesting that minor literature is a condition as much as it is a genre, so that the politics and collectivity of “minor” literature might be found embedded in other literatures.

Deleuze and Guattari’s identification of minor literature as a condition rather than a specific genre sounds like the modes of speculative fiction like magical realism and science fiction. For example, the British definition of science fiction as a field rather than a genre means science fiction, like minor literature with its political leanings, can challenge the visions of the posthuman through marginal literary genres like science fiction and magic realism.¹² Similarly, magic realism is often identified as an element that emerges in other literature.¹³ Magical realism and science fiction are genres that also can function as types of storytelling that emerge in other genres as well.

The magical realism in Salman Rushdie’s *Grimus* and *The Satanic Verses* (discussed in chapter four) allows those texts to investigate how metamorphosis of the human into an unhuman or posthuman figure might be represented. Magical realism describes a genre characterized by uncertainty (Warnes 4), in which one finds “inspiredly absurd supernaturalism that vigorously resists analysis, psychological or otherwise” (Walker 347). Stephen Slemon suggests that magical realism “carries a residuum of resistance toward the imperial center and to its totalizing systems of generic classification” (408). Magical realism in its traditional mode – as a minor literature that adopts the language of the majority – offers a means to appropriate dominant

¹² The important of national difference in construction of the posthuman, though largely untheorized in the preceding chapters, nevertheless re-emerges in Deleuze and Guattari’s notion of minor literature and observations about the difference between, for example, British and American versions of science fiction. Cultural differences are indeed reflected in attitudes toward literature and the ideas and figures it represents. Consider for example, Diana Relke, who in discussing the liberal humanism of the *Star Trek* enterprise describes how as a Canadian, whose national myth is one of multiculturalism, her perspective is different from that of an American because “as ‘a nation of minorities,’ we really have no choice but to acknowledge that ‘the “human” is a completely open-ended signifier, subject to endlessly different interpretations’” (xvii). Relke’s example indicates how minor literature might operate, when its writer (or reader) thinks differently than the majority of other writers or readers.

¹³ Magical realism’s emergence as a genre in the twentieth century is also described by Neil Kortenaar as a return to the romance. The development of realism was a reaction against romance, so that “magic realism’s displacement of the realist novel’s own displacement represents the return of romance” (767).

realist narratives for its own ends; thus an accurate “typology of magical realist effects [would respect] the motivations behind each text’s use of magical realism” (Warnes 8).

Magic realism uses paradox and strange juxtaposition to make ordinary objects or events seems mysterious (D’Haen 191). Thus magical realism is a “*ruse* to invade and take over dominant discourse(s)” that is used by those who are on the margins, or those writers from the center who wish to “dissociate themselves from their own discourses of power and to speak on behalf of the ex-centric and un-privileged” (195). Stephen Slemon suggests that the politics of magic realism “displaces the established categories through which a succession of Europeans and Americans construed other cultures either in their own image or as alterity” (903) because it uses “radical assessment” to create a historical consciousness (Sangari 910). The social and cultural needs served by magic realist elements are the reason why British magic realism is a “heightening the real, rather than doing away with it” similar to the “epiphanic moments of the modernists” (Delbaere-Garant 261). Even more fundamentally, Rawdon Wilson describes magic realism as embodying “the fundamental mode of storytelling” which opposes itself to realism (228).

Wendy Faris suggests that magical realism’s mode of storytelling ranges “from events that are not impossible but so improbable as to be nearly magical to occurrences that are nearly real, so that the effect is to blend those two worlds; in some instances near the middle it is virtually impossible to decide to which end of the spectrum an event belongs” (115-6). This is similar to “what Fredric Jameson calls the ‘strange seductiveness’ of the term... – its suggestion of spiritual verities beneath the surface of the everyday, the nostalgic solace it appears to offer to a rationalized, secular world” (Warnes 2). Faris also suggest there is an “irreducible element” of magic at the heart of magical realism which disrupts the reader’s sense of the everyday (7). This

disruption of ideas about time, space, and identity also disrupts everyday notions of human identity, autonomy, and subjectivity just as the posthuman does.

Like magical realism, science fiction as a genre can be a strategy for identifying and exploring the implications of the posthuman. Darko Suvin identifies science fiction as a text that combines storytelling with novelty, whose combination produces a cognitive estrangement in the reader (71-3). Philip K. Dick describes this novelty as a “*distinct new idea*” within an otherwise realistic world that the reader can recognize, which causes a sense of *dysrecognition* in the reader (99). This ‘distinct new idea’ is often future-oriented, and must be both intellectually stimulating and reflective of contemporary conditions in order to cause a sense of ‘dysrecognition’ of that realist world. Catherine Ramirez describes how dysrecognition, or Suvin’s cognitive estrangement “allow us to imagine epistemological and ontological alternatives” (378). The estrangement confronts normative systems so that spatial displacement of the storyworld of the text “create(s) the freedom to voice assumptions otherwise restricted by a realist narrative frame, and the geographic displacement of identity formations” (Melzer 1-2).

Science fiction is often imagined to be future-focused; however, its futuristic focus is not designed to predict the future but to comment on the present. Its purpose is to “defamiliarize and restructure our experience of our own *present*, and to do so in specific ways distinct from all other forms of defamiliarization” (Jameson “Progress” 151) so that the future it presents is predicated on our present as the science fiction narrative’s past.¹⁴ This future provides an

¹⁴ Jameson explains how science fiction does not try to imagine a real future:

Rather, its multiple mock futures serve the quite different function of transforming our own present into the determinate past of something yet to come. It is this present moment - unavailable to us for contemplation in its own right because the sheer quantitative immensity of objects and individual lives it comprises is untotizable and hence unimaginable, and also because it is occluded by the density of our private fantasies as well as of the proliferating stereotypes of a media culture that penetrates every remote zone of our existence - that upon our return from the imaginary constructs of SF is offered to us in the form of some future world's remote past, as if posthumous and as though collectively remembered.... SF thus enacts and enables a structurally unique ‘method’ for apprehending the present as history, and this is so irrespective of

opportunity to contemplate our own present by displacing the reader from the present through a productive defamiliarization and speculation (which is why the genre is sometimes labeled speculative fiction).¹⁵ In this way, science fiction acts as a thought experiment about a given idea, technology, or scientific development through the ideas and images it presents.

Science fiction is generally agreed to have come of age in the scientific romance of the late nineteenth century, so that the decline of the historical novel coincides with rise of science fiction.¹⁶ Jameson suggests: “We are therefore entitled to complete Lukacs’ account of the historical novel with the counter-panel of its opposite number, the emergence of the new genre of SF as a form which now registers some nascent sense of the future, and does so in the space on which a sense of the past had once been inscribed” (Jameson “Progress” 150). Moreover, from its beginnings in the scientific romance, science fiction has been a literature about technology. Its imagined scientific developments populate its narratives with fantastical technologies, just as in the more mundane everyday, science drove the development of technologies, including ones that enabled the British project of empire building.¹⁷ Technology represents science within visual

the ‘pessimism’ or ‘optimism’ of the imaginary future world which is the pretext for that defamiliarization. (“Progress” 153)

¹⁵ The definitions of “speculative fiction” and “science fiction” vary as greatly as the number of writers, theorists and other users of such terms. Often, the term “speculative fiction” is understood to be an umbrella-term under which “science fiction” resides as a specific sub-genre. For some theorists and users of the term, “science fiction” only refers to highly technological or space-oriented fiction, while for others “science fiction” is simply extrapolation of existing culture into the future. “Speculative fiction” is thus usually a broader term that includes space-faring, technologically oriented science fiction along with stories that include more fantastical elements, like talking animals, vampires, alternate universes, or even witches and sorcerers. “Speculative fiction” also seems a more appropriate term when applied to early examples of the genre, such as H.G. Wells’ half-animal, half-human characters in *The Island of Dr. Moreau*, Frankenstein’s monster’s unexplained animation, or the adventures detailed by Jules Verne. Regardless of the terminology, the genre is characterized by an extrapolation of contemporary culture into a future which alters the social and cultural situation in which protagonists find themselves.

¹⁶ Margaret Atwood suggests that science fiction is simply a change in terminology from the scientific romance of the late nineteenth century (“Aliens Have Taken the Place of Angels”) while according to Patrick Parrinder, the rise of the scientific romance “reflected the hold that the ‘dis-encharmed universe’ of evolutionary theory exerted over the British imagination” (702).

¹⁷ For the British, technology is tied up with Empire. Istvan Csicsery-Ronay notes that British science fiction “took off” at the height of Empire (231) and the technological inventions of the eighteenth and nineteenth centuries in transportation and communication certainly facilitated the expansion and control of an increasing Empire. These kinds of technologies not only affect the colonies, but in bringing the metropole into closer proximity with people

representations of the object – the machine, the gadget, the marvel – while the technologies that are being produced provide more and more people with encounters with strange and unfamiliar objects, people and places.¹⁸

The practical application of science embodied in technology often ignores the social implications of those developments, particularly in imperialist projects, so that science fiction is one means to explore those social applications. From its beginnings in the scientific romances of H.G. Wells through to Justina Robson in the twenty-first century, science fiction can explore the social effect of technologies to ask just how the development of technologies, like those of the cyborg and the clone, impact the humans who are changed by them.

Tracing Posthuman Figures from the Mundane to the Fantastical

Science fiction and magic realism as literary genres and modes offer strategies for writers wishing to challenge cultural norms and assumptions. The subversive nature of magical realism and science fiction, arising out of their development as responses and sometimes critiques to the realist and humanist narratives they challenge, allows these genres to function like the minor literatures that Deleuze and Guattari identify. As modes of literature, they are not confined to texts clearly identified as “magical realism” or “science fiction”; rather, they leak out of those

who are very different, technological development “led to changes of consciousness that facilitated the subjugation of less developed cultures, wove converging networks of technical administration, and established standards of ‘objective measurement’ that led inevitably to myths of racial and national supremacy” (Csicsery-Ronay 233). Technology made imperial supremacy possible, and the residual effects of technological colonization – communication and transportation systems in particular – have survived in the colonies long after the ideology of Western imperialism faded (Headrick 4). The superior technological power of Britain made it easy to adopt an attitude of superiority, but the effects of colonization back on the metropole also made the concern about counter invasion just as disconcerting.

¹⁸ The development and proliferation of photography brought home the project of imperialism through its images and “consolidat[ed] a new idea of political power linked to technological momentum” that had a “profound effect on culture in the home countries, even when the effect was hardly noticed at the time” (Csicsery-Ronay 233-4).

categories, emerging in other kinds of fictions whenever the text needs such strategies. The arc of the chapters to follow traces the antinomies identified above through narratives whose characters become increasingly fantastical, but who are all identified or defined by their relationship to the posthuman.

In the first chapter of this dissertation, the use of metaphor and analogy in Zadie Smith's *White Teeth* (2005) demonstrates how genetic knowledge can be used to construct and constrain human bodies into racial and ethnic categories. The novel employs bodily metaphors like "teeth" and the rhetoric of the gene to explore how genomics (the study of DNA and the human genome) offers knowledge that can be used to marginalize characters in the novel. Within the realist narrative of first and second generation immigrants in Smith's story, characters attempt to develop and maintain their identity in the face of being labelled as genetic outsiders.

The allegorical fantasy of Kazuo Ishiguro's dystopic alternate-history England *Never Let Me Go* (2005) is the focus of the second chapter. As in Smith's novel, genetics operates within the narrative as a subset of biotechnologies that can intervene in the production and reproduction of human beings. However in this story, these biotechnologies are explicitly used to create people who are excluded from participation in the dominant culture. The biotechnologically-produced clones of the novel can be read as an allegory for other kinds of marginalized groups, including the social death that Orlando Patterson suggests is the defining feature of the slave.

The third chapter continues the discussion of the posthuman through Ian McEwan's *Saturday* (2005), which contemplates the intertwined discourses of genetics, familial inheritance and the role of medical intervention on the body. The story takes place in London where the narrator explores the implications of good (and bad) genetics and the promise of objective evaluation of the subject offered by genomics, while the protagonist remains blind to the

subjective employment of such technologies. The chapter explicitly connects McEwan's narrative to the cultural and social issues that are implied in its use of medicine and genetics as marker of class and prestige.

Salman Rushdie's use of magical realism in *Grimus* (1975) and *The Satanic Verses* (1988) blurs the line between the human and the not-human in ways that challenge the narrative primacy of realist narratives as a way of understanding the posthuman. The fourth chapter examines how the interplay between realist and fantastical elements in magical realism is a technique that allows the author to question what it means to be human and the failures of objectivity in cultural maintenance and policing of community boundaries. In these novels, the characters' bodies, through difference and metamorphosis, become markers of their inclusion or exclusion within the national and political body, so that the genre becomes a technique for confronting the boundaries of the human.

The fifth chapter explores two science fiction storyworlds to understand how posthuman bodies are identified as different from those of the 'natural' born human. The conflicts that the posthuman characters in Amitav Ghosh's *The Calcutta Chromosome* (1995) and Ken MacLeod's *The Stone Canal* (1996) experience echo conflicts outside of literature: either those we currently face (based on race, ethnicity, or nationality) or those we may potentially face (between altered and un-altered humans). The thought experiment of the science fiction novel allows both writers and readers a venue in which to explore the kinds of issues about belonging and human nature that posthuman figures engender.

The final chapter turns to a science fiction narrative in Justina Robson's *Natural History* (2005), which features characters that embody almost every possible posthuman modification of the human body. It provides an excellent overview of the various recent technologies of

computation, medicine, and genomics that have radically changed the way scientists and other practitioners of these technologies view the human organism. In presenting the posthuman in a multitude of potential manifestations, the chapter acts as a summary of the issues raised by the posthuman in earlier chapters.

The production and reproduction of posthuman figures within the texts discussed in this project follows no consistent plan. The variation in genres, modes, and treatment of posthuman ideas and figures is too large to fall into one coherent vision of the posthuman. Contrary to being a problem for developing an understanding of the posthuman, this diversity demonstrates the multi-faceted nature of posthuman figures and the discourses they engender. The posthuman may be defined by the conditions of its production: cyborg-like prosthetics or genetically-engineered persons like clones, but as many of these texts suggest, the social construction of the category: “posthuman” is even more crucial for understanding how the posthuman operates within these texts. Exploring the presentation of the posthuman in different contexts and genres may not present a single, coherent vision of the posthuman, but it does offer a field on which social constructions of posthuman might be mapped.

CHAPTER 1 Genetically-Determined Posthumans

Nature, not nurture, guided our behavior. When we weren't dancing to a chemical tune, we were marching to the genetic drummer.

Robert J. Sawyer *The Terminal Experiment*

... things are getting scary. I mean, reading this shit you just realize how close science is to science fiction.

“airport girl,” Zadie Smith *White Teeth*

As the “airport girl” suggests when she reads about transgenic mice and biotechnology, science is becoming at times indistinguishable from science fiction. Further, she suggests that the scary part of biotechnology is how it might be employed: “Yeah, you know, messing about with the body...I mean, I’m a politics student, yeah, and I’m like: what are they creating? And who do they want to wipe out? You’ve got to be seriously naive if you don’t think the West intend to use this shit in the East, on the Arabs.... I mean, if you’re Indian like me you’ve got something to worry about, yeah?” (Smith 345). Even if it is not used for genocide as the “airport girl” suggests, the knowledge represented by biotechnologies like genomics offers a means for including or marginalizing different groups of humans based on their genetic makeup. This chapter will examine how the social construction of genetic difference marginalizes characters in Zadie Smith’s *White Teeth* (2000). The opposition between genetic determinism and a more liberal cosmopolitanism as a feature of contemporary literary representations of the posthuman emerges in this novel as conflict between genetics and other factors like family, history, faith, and love.

In *White Teeth*, the conundrum of the biological posthuman is represented through bodily metaphors: specifically, the teeth. The chapter entitled “The Root Canals of Alfred Archibald Jones and Samad Miah Iqbal” begins:

Apropos: it’s all very well, this instruction of Alsana’s to look at the thing close up; to look at it straight between the eyes; an unflinching and honest stare, a meticulous inspection that would go beyond the heart of the matter to its marrow, beyond the marrow to the root – but the question is how far back do you want? How far will *do*? (71)

Getting to the ‘marrow’ or ‘root’ of the matter is an enduring theme in Smith’s novel about Englishness, multiculturalism, and immigrant experience in twentieth-century England. The text also depicts the clash between a kind of genetic determinism that determines the fate of the characters (in some cases before they were even born), the effect of personal and immigrant history, and a kind of cosmopolitanism that suggests that anything might be possible. The roots in the novel run deep, whether they are understood as a matter of genetics, or of history.

The Genetic Roots of the Iqbals, Joneses and Chalfens

White Teeth tells the story of the Iqbals, Joneses and Chalfens. Although the novel is a complex narrative of relationships, these three families best represent the conflict between belonging and marginalization in the story. Samad Miah Iqbal and his wife Alsana are trying to raise their twin sons, Magid and Millat, in Willesden where they live; however, Samad’s attempts to provide the boys with a sense of their heritage fail. The son he sends back to Bangladesh, Magid, (he can only afford to send one son) comes back a “pukka Englishman,” while the son who stays joins up with a radical Islamist group, the Keepers of the Eternal and Victorious Islamic Nation, whose

uninspiring acronym –KEVIN – suggests that Smith adopts an ironic tone in presenting the twins’ opposing choices in constructing their identities.

Samad is friends with Archie Jones, who he met in World War II. At the end of the war, the pair discovers a Doctor Perret hiding out near where they are stationed who reportedly worked on eugenics for the Nazis, and Samad goads Archie into killing the doctor. Archie takes the Doctor away and comes back alone a short time later, but we learn later that Archie spared the doctor’s life based on the toss of a coin. Archie’s lie of omission to Samad in killing the Nazi doctor is revealed during the press conference when Marcus Chalfen introduces his mentor, Doctor Perret, to the audience. Archie’s decision not to kill the doctor dictates many of his choices later in life, which he often leaves to the toss of a coin, including the decision that leads to meeting and marrying Clara, daughter of the Jamaican-born Hortense. His daughter Irie, whose own child is, like her and her grandmother before her, a mixed race child fathered by either Millat or Magid, seems equally susceptible to the vicissitudes of chance as her father.

Marcus and Joyce Chalfen along with their children are third generation Poles who Irie thinks are “more English than the English,” a sentiment originally applied to Irish soldiers in the British army during WWII. Marcus is a genetic scientist working on a FutureMouse©, genetically programmed to express cancerous growths according to predetermined plan. His wife Joyce admires this control, while his son Josh resents his parents, joining an animal rights group (again with a rather ironic acronym – FATE – Fighting Animal Torture and Exploitation) that seeks to interrupt the press conference about the FutureMouse© in the final scene of the novel.

The metaphor of the teeth provides structure to the narrative and connects the multiple stories of the novel. In one of the central chapters of the novel, the title: “Canines: The Ripping Teeth,” metaphorically connects genetics to social status, particularly the status of the immigrant.

The violent action of the canines, meant for tearing and ripping, is suggestive both of the upheaval that immigration can generate for individuals and families, and the violence that might meet those immigrants in their new home. In the narrative, we are told “this had been the century of strangers, brown, yellow and white. This had been the century of the great immigrant experiment” (271), but this experiment generated a great deal of resentment in some quarters (for example, Enoch Powell’s ‘Rivers of Blood’ speech of 1968), as well as anxiety for those immigrants. According to Smith, one of the immigrant’s fears is the potential for dissolution, expressed in the novel in genetic terms: “it makes an immigrant laugh to hear the fears of the nationalist, scared of infection, penetration, miscegenation, which is small fry, *peanuts*, compared to what the immigrant fears – dissolution, *disappearance*” (272). For Alsana, this means “their Bengalianness [will be] thoroughly diluted, genotype hidden by phenotype”; while Hortense thinks about how she “hadn’t put all that effort into marrying black, into dragging her genes back from the brink, just so her daughter could bring yet more high-colored children into the world” (ibid.). What both women fear is the disappearance of their ethnic identity; the novel suggests that such involuntary dissolution of identity is inherently violent, and the fear that genotype will be “hidden” by phenotype expresses this fear in the language of genetics.

Genetics operates within *White Teeth* as a way of representing social, cultural, and bodily difference. During one of her lessons at the Chalfen home, Irie learns from Marcus that creating transgenic mice – mice that have genes from other species as well as their own – clarifies the differences between genes, with an eye to eventually controlling their operation (282-3). Irie then imagines herself as a transgenic creature. She wants to be one with the Chalfens, to separate “from the chaotic, random flesh of her own family and [be] transgenically fused with another. A unique animal. A new breed” (284). For Irie, the hybridity of a transgenic animal is attractive,

allowing her a fantasy of escape from the tyranny of her family life. However, for Samad, hybridity represents the very loss of identity that Alsana and Hortense fear: “[Millat] infuriated Samad beyond all reason. No, that’s wrong. There was a reason. Millat was neither one thing nor the other, this or that, Muslim or Christian, Englishman or Bengali; he lived for the in between, he lived up to his middle name, *Zulfikar*, the clashing of two swords” (291). While genetics offers a powerful way of imagining identity, the conflict between the two possible expressions of genetics (being able to exactly know and control the genes) and hybridity (the ability to combine those genes) mirrors the conflict that many of the characters of the novel feel between their heritage and their creation of a new life as immigrants.

In *White Teeth*, genetics and the bodies it creates, become a contested zone of control. But the unit of genetics – the gene – is only a representation of something that is more abstract than its ‘realness’ implies. Lennard Davis suggests that the gene is a prosthesis that questions the certainty of race. Because Mendel’s work only identified inheritance patterns, not the location where they occurred, “he left open the idea that the gene, in this sense, is a prosthesis - a human-made artifact that stands in for, replaces, and thus becomes the location of inherited traits” (95). The inability of genetics to pinpoint the place on the DNA strand that influences most human characteristics means that:

The ‘realness’ of the gene in current discourse is belied by the fact that there really is no locus - no ‘there’ there - for genes.... So the prosthetic gene is in fact an imaginary location that replaces the ‘realness’ of physical features, hair color, and so on [so that] the gene now acts as a kind of prosthetic *en abyme*, an endlessly deferred location. (ibid.)

The prosthetic gene means that “the human body, as a construct, could not have an entirety and an identity if there were no addition, now called genetic, that was the place of origin, the real

place for being human, and for being a certain kind of human - whether Caucasian or Negroid or Semitic” (96). The gene supplements the human body by providing another means for explaining it that simultaneously replaces the body as the site of the real.

As a supplement, or displacement of the body from the real to the abstract, genetics enters the realm of language. But the embodied nature of metaphor identified by Lakoff and Johnson suggests that the body cannot be eliminated from our conceptualization of the human.¹⁹ Certainly, understanding DNA in order to produce genetic-dependent therapeutics (and the science of genomics), imagines the gene as a prosthetic through which the body can be infinitely replicated. But as Sheryl Vint argues, subjectivity is both material and abstract so that posthuman visions that transcend the body are “merely fantasies about transcending the material realm of social responsibility” because the body is crucial to our concept of being human (8).²⁰ The notion that the DNA in every cell is a prosthetic blueprint for the whole body would reinscribe genetic determinism as the primary method for thinking about the relation between the individual and his or her DNA.

In Smith’s novel, the primary metaphor for genetics and the experience of the immigrant is the teeth. Teeth are a distinctive feature of the human body and they do not re-grow, so damage to the teeth results in their ultimate loss. At the same time, they are one of the most enduring and hard components of the body. Like bones, they are the last part of the body to

¹⁹ In *Metaphors We Live By* and *Philosophy in the Flesh* Lakoff and Johnson explain that we categorize different aspects of social culture through our use of embodied language in order to understand abstract or metaphorical concepts while Katherine Hayles suggests in *How We Became Posthuman* that the body is necessary to human identity because a human mind divorced of its body would not longer be human. The roboticist Rodney Brooks has recognized this dependence on the body for conceptualization and in *Flesh and Machines* has suggested that robots will need to have a similar understanding of their bodies in order to mimic human intelligence.

²⁰ Anne Balsamo also warns that the “disappearing” posthuman body that is all abstraction (i.e. divorced from the body) is gendered such that it is a new condition of postmodernity where “the disappearing body actually marks the historically specific identify of the male body as it experiences this corporeal invasion for the first time” (219). In addition, this “marked body signals the fact that bodies are eminently cultural signs, bearing the traces of ritual and mythic identities” so that the body is required in order for cultural identities to be produced (225).

decay, and have a hollow center that nourishes the calcified tissue.²¹ Unlike bones, that center of the tooth (extending into the root) can die without affecting the ability of the tooth to function, and that center will actually slowly disappear in response to chronic trauma and age. The roots of the tooth bind it to the jawbone, making extraction of teeth difficult, hence the expression that something is as hard as “pulling teeth.” The root canal procedure (another metaphor in Smith’s novel) is a means by which the center of the tooth is cleaned out after it has died.²² These characteristics are ideally suited to Smith’s use of teeth as metaphors for personal experience, and in the case of the immigrant, this experience is also understood through the visible markers of race and its presumed basis in genetic composition.

Mr. Hamilton, the elderly recipient of Irie, Magid and Millat’s harvest festival contribution, demonstrates how genetics and race form a kind of mixed metaphor for difference in his musings on the Congo and wisdom teeth. Mr. Hamilton suggests wisdom teeth are passed down from father to son, telling the children,

one sometimes forgets the significance of one’s teeth. We’re not like the lower animals - teeth replaced regularly and all that – we’re of the mammals, you see. And mammals only get two chances, with teeth.... Because they’re your father’s teeth, you see, wisdom teeth are passed down by the father, I’m certain of it. So you must be big enough for them. God knows, I wasn’t big enough for mine.... (144-45)

²¹ In Herbert Sussman and Joseph Gerhard’s discussion of cyborg figures in Dickensian novels, they note that the teeth “are highly visible as well as being the least squishy parts of the body and apparently the least organic, most readily replaceable elements of the organism. Teeth occupy the boundary in the body between the firm and the hard and the wet and the organic” (84), two observations that call attention to the ways in which the teeth also can function as a marker of the same kind of technological intervention into the body that the cyborg, another posthuman figure, represents. It seems no coincidence that the widespread use of replacement teeth (dentures) that Sussman and Gerhard also describe, emerged in the nineteenth century with its rapid technological growth.

²² I owe thanks to Dr. Dwayne Kowalchuk for a clear, explanation in layman’s terms of the morphology and development of the tooth that this description is based upon.

Mr. Hamilton's strange explanation of the genetic basis for wisdom teeth (an erroneous assumption about the third molars and more reminiscent of Darwinian thought than twenty-first century genetics) is interrupted by his own description of his time in the army and how "when I was in the Congo, the only way I could identify the nigger was by the whiteness of this teeth, if you see what I mean. Horrid business. Dark as buggery it was" (144). That one's teeth might betray one – either rotting in Hamilton's case, or revealing one to the enemy in the case of the Congo – suggests that there is no way of escaping one's genetic heritage.²³ Mr. Hamilton, although a marginal character in the text and one that the text works to distance itself from, nonetheless expresses a kind of genetic determinism that the novel as a whole, and the title (which emerges out of this scene), questions with the competing discourses of genetics and personal history as explanations for experience and behavior.

In Smith's chapter titles, the shorthand "root canals" is used to connect the cleaning out of a diseased root in a tooth to the immigrant experience. The chapter "The Root Canals of Alfred Archibald Jones and Samad Miah Iqbal" describes how their unlikely friendship formed and their bond that seals that friendship through the fate of "Dr. Sick," the geneticist who re-emerges at the end of the novel along with the genetically modified mouse. "The Root Canals of Hortense Bowden" chapter additionally tells us that "a little English education can be a dangerous thing" in relating how Hortense's mother was both impregnated and taught by Captain Charlie Durham, a "*fool bwoy*" who loved her "just as the English loved India and Africa and Ireland; it is the love that is the problem, people treat their lovers badly" (295-300). "The Root

²³ Of course Mr. Hamilton's homosexuality (he refers to himself as a "queen") also is a human behavior that has been implicated in debates about genetic determinism. The report that a 'gay gene' was discovered in 1993 by Dean Hamer of the NIH (Fukuyama 38) was immediately challenged, with other researchers like George Rice unable to reproduce Hamer's work (Roof *Poetics* 137). As Elizabeth Shea notes, genes for complex human behaviors – intelligence, homosexuality, alcoholism – "create impressions of *covering a reality*" ("Rhetorical Figure" 516) and Mr. Hamilton's belief that his wisdom teeth were passed on by his father but not that his homosexuality was draws our attention to the continuing debate about the role of genetics in human behavior.

canals of Mangal Pande” tell one part of that story of love, connecting the history of Pande’s role in the Indian Mutiny of 1857 to Samad’s personal quest to salvage his family’s history from ignominy. In this “root” chapter we also hear an echo of the first “root canal” chapter when Archie suggests that some men are not capable of killing and could spare the lives of even those they despise, to which Samad replies “A man is a man is a man. His family is threatened, his beliefs attacked, his way of life destroyed, his whole world coming to an end – he will kill. Make no mistake. He won’t let the new order roll over him without a struggle” (216-17), even though he impotently struggles against the new order that his sons represent in their paired embrace and rejection of Englishness. In both the root canal procedure and the immigrant experience, although the material within the root is cleaned out and removed, the root itself still remains, anchoring the tooth (and metaphorically the immigrant) to its personal history of development.

For the immigrant, his or her history affects not only how others view the immigrant (with immigrants from non-Western countries being more readily marked as other) but also integration into the new homeland.²⁴ *White Teeth* specifically labels the twentieth century as the “great immigrant experiment” which challenges both national and ethnic boundaries (Smith 271). But as Paul Gilroy has also noted, the hatred of a clearly identifiable other that emerged at the end of the twentieth century in London (as a city of immigrants) arose not so much out of a perception of a clear racial difference but as a hatred of hybridity or partial difference (“A London” 68). The threat is not of a clearly identified other, but of others that are undetectable

²⁴ In the twentieth century, genetic engineering’s manipulation of DNA and the human body means that the body can become a site on which issues of information, autonomy, and identity coalesce discursively and earlier imperial histories echo within the twentieth and twenty-first centuries, as Britain and other former colonial powers attempt to reconcile their colonial past with their multicultural futures. Paul Gilroy makes the implications of this imperial history crystal clear in his opening statements in *Postcolonial Melancholia*, where he writes: “the political conflicts which characterize multicultural societies can take on a very different aspect if they are understood to exist firmly in a context supplied by imperial and colonial history... The imperial and colonial past continues to shape political life in the overdeveloped-but-no-longer-imperial countries” and revision of colonial history “is misleading and dangerous because it feeds the illusion that Britain has been or can be disconnected from its imperial past” (2).

because of their hybrid nature. Immigrants have the potential to participate as full members of society, or to challenge traditional notions of who belongs within that community, and it is this anxiety and its connection to the science of genetics that emerges repeatedly in Smith's novel.

Genetic Determinism in *White Teeth*

Smith's characters use the rhetoric of genetic determinism for explaining behavior as a way of questioning national belonging. In the late twentieth century, the mapping of the human genome through the Human Genome Project has increased the tendency of both the public and scientists to address individual, and to some extent group behaviors, through recourse to genetic explanations. Genetic determinism is another term for the "nature" part of the nature/nurture debate that has been going on in biology for decades. Scientists who promote a deterministic view of genetics point to genes as the explanation for a wide range of not only physical features, but also complex social behaviors.²⁵ It is this supposed genetic basis for human behavior that opponents of genetic determinism point to as proof that a gene responsible for alcoholism, homosexuality, or intelligence will never be discovered because such behaviors are too complex to be determined by a single gene or set of genes.

A belief in genetic determinism underlies many of the social and cultural relationships in *White Teeth*, and sometimes bubbles to the surface in the most unusual ways. The novel presents personal history (including faith) and genetics both as potential ways of explaining individual

²⁵ James Watson's comments during an interview in October 2007 are an excellent example of the effect genetic determinism has on public debate. In the interview, Watson (co-discoverer of DNA) claimed that African people are less intelligent than other races due to their genetics and further that the gene for intelligence would be discovered in less than a decade. The public outcry against his comments led the Science Museum of London, at which Dr. Watson was scheduled to speak a few days later, to cancel that engagement in response (Nugent "Black people 'less intelligent' scientist claims").

identity but it does so in ways that question characters' use of genetics for this purpose. Samad, as a first generation immigrant and great-grandson of Mangal Pande, is shaped by the history of his emigration and his family's reputation. However, he is confused by the idea that genetics might have a role in shaping his or his children's identity. When he meets Magid and Millat's teacher, Poppy Burt-Jones, she tells him that Millat sometimes struggles because "I think he's probably a little intimidated by Magid in that way, but he's such a personality! He's just not so... academic. But everybody just *loves* him - such a beautiful boy, as well. Of course,' she said, giving him a wink and a knock on the shoulder, 'good genes,'" to which Samad thinks, "*Good genes? What did she mean, good genes?*" (Smith 113) For Samad, his children's character arises from their history as his sons and the great-great-grandsons of Mangal Pande; the notion that it is their shared genetics that is the primary reason for his children's fate or even their appearance is unfathomable. Of course, since Poppy Burt-Jones and Samad begin an affair shortly after this, we can read her suggestion as an attempt at flirting with Samad, an indirect reference to his attractiveness. Certainly Smith's inclusion of genetics as a kind of twenty-first century pick-up line implies that Poppy's social skills might be predicated on this belief in genetic determinism. However, references to genes also reminds us that ideas about genetic determinism also invoke categories of race and ethnicity, which, though disavowed by science, are still part of a popular conception about differences between people. Thus Poppy's suggestion reminds the reader that Samad (and his sons by extension) are identified by their ethnic appearance (which is often correlated, correctly or not, with genetics), instead of their history.

Similarly, when we are introduced to the Chalfen family, they are presented through the language of genetics. Joyce and Marcus also use genes as a kind of flirtation. When Joyce Chalfen would show off something new that baby Josh does to her husband with the phrase: "*just*

like you"; the response would be "*good genes*, he'd say to her, patting her behind and luxurious thighs" (Smith 259). Their admiration is mutual with Joyce admiring Marcus because

he *created* beings. He went to the edges of his God's imagination and made mice Yahweh could not conceive of: mice with rabbit genes, mice with webbed feet (or so Joyce imagined, she didn't ask), mice who year after year expressed more and more eloquently Marcus's designs: from the hit-or-miss process of selective breeding, to the chimeric fusion of embryos, and then the rapid developments that lay beyond Joyce's ken and in Marcus's future – DNA microinjection, retrovirus-mediated transgenesis (for which he came within an inch of the Nobel, 1987), embryonic stem cell-mediated gene transfer – all processes by which Marcus manipulated ova, regulated the over- or under-expression of a gene, planting instructions and imperatives in the germ line to be realized in physical characteristics. (259-60)

The technical description of Marcus's work, although mysterious to Joyce, follows Marcus's "designs" for the mice and this technical reproduction is connected to Joyce's more traditional reproduction. The text ironically tells us: "Truth was truth to a Chalfen. And Genius was genius. *Marcus created beings*. And Joyce was his wife, industrious in creating smaller versions of Marcus" (260). When we find these ironies expressed in the text, it reminds us that absolutes like "truth," or "genius," are not the same as the genetic lottery of reproduction, and Joyce's valorization of Marcus's contribution to their children reduces complex traits like intelligence to genetic markers that set off the Chalfens from everyone else. But there is more than just genetics going into the creation of the Chalfen family. The passage's use of genetic terminology obscures the middle-class privilege of the Chalfens, making the difference between the Chalfen home and the homes of the Iqbals and Jones seem a matter of genetics (or ethnicity) instead of a function of

the different socio-economic status of the newly arrived and the established immigrant families.²⁶ The Chalfens are just as exotic to Irie as she is to them, but Irie's fascination with the Chalfen lifestyle is partly a fascination with their affluence as it is relative to her own home. Millat's vision of the Chalfens is more explicit: "where Irie saw culture, refinement, class, intellect, Millat saw money, lazy money, money that was just hanging around this family not doing anything in particular, money in need of a good cause that might as well be him" (268). The social privilege of the Chalfens that Irie and Millat see might be a more accurate way of describing their insular family unit than Joyce Chalfen's deployment of genetic rhetoric to explain her admiration for her family.

The Chalfens may come from 'good genes,' but in their celebration of those good genes, they have cut themselves off from any non-Chalfen influences and run the risk that all breeders know arises from too little variety in the genetic line: inbreeding. The narrator tells us "The Chalfens had no friends. They interacted mainly with the Chalfen extended family (the *good genes* that were so often referred to...)... Bottom line: the Chalfens didn't need other people" (261), but "the century was drawing to a close and the Chalfens were bored. Like clones of each other, their dinner table was an exercise in mirrored perfection, Chalfenism and all its principles reflecting itself infinitely... there was no one left to admire Chalfenism itself. Its gorgeous logic, its compassion, its intellect" (262). The "mirrored perfection" of the "gorgeous logic" of Chalfenism emerges from their similarity, but as perfections of one another, these clones pay the price of individuality, leading to their boredom. No wonder the Jamaican-English Irie's

²⁶ The narrator informs us that the Chalfens are themselves third generation immigrants from Germany and Poland, a fact that means they ironically are not "more English than the English" (273) as Irie thinks, but it is also a fact that points to the differential integration of European immigrants and former colonials. It is telling that by the third generation of Chalfens, they are indistinguishable from the English, while one suspects that Irie's child, a third generation immigrant (from a former colony) will not be able to share such anonymity within an English crowd.

fascination with the Chalfen lifestyle and even the Bengali Millat's rebellious rejection of their values (but not their money) offer the admiration that Joyce desires.

Of course, the "gorgeous logic" of Chalfenism is at the same time the reason why the oldest son Josh rebels against the household, joining FATE, who plan to disrupt Marcus's work on the FutureMouse©. The "gorgeous logic" of the inbreeding inherent in Chalfenism might represent both the physical act of creating children and the socialization of Chalfenism that leads the family to exclude non-family members from their social circle. Josh's attempts to escape the family cannot overcome his physical resemblance to other family members; however, in joining FATE he clearly signals his rejection of the family's social values. The acronym of the group – FATE – would seem to suggest that Josh's attempts to escape his family values are futile since he cannot escape the family into which he was born. Smith's construction of the narrative would imply that both the Iqbals and Chalfens are subject to the forces of their heritage, as much as the Chalfens at least have sought to leave that past behind.

What is interesting in these examples is that notions of 'good genes' mentioned in the novel: Poppy to Samad, the Chalfens, or Mr. Hamilton's failure to live up to the good genes of his father's wisdom teeth, are all expressed by characters identified as *English* characters. This is important because genes are constructed as a "natural" category (Samad's objection to Chalfen is that he is manipulating the natural order of things) and the English imperial project has rarely questioned its "natural" authority over others. In the novel, the English are also accused of having an unrealistic view of the stability of the world, including presumably, genetic heritability.

Historical Determinism in *White Teeth*

Genetic determinism in *White Teeth* opposes the enduring power of history to shape human experience (including of course, the immigrant experience), while both offer means for interpreting the metaphor of the tooth root that pervades the narrative. The factor that controls the lives of Samad or Alsana is their familial history, which is caught up in the history of the colonial venture, as evidenced in Samad's reverence for his great-grandfather Mangal Pande. It is different for their children for whom it is their race, the phenotypic evidence of their genotype, which dictates their lives. Samad's distress at the way his children have turned out arises in part because he understands their choices as a failure of the promise of immigration.

Just as Irie thinks the Chalfens are "more English than the English," Samad also thinks Magid has lost his connection to his family's history and that his disappointment in both boys: a "white-suited" "pukka Englishman" and a "green-bow-tie-wearing fundamentalist terrorist" is a result of raising them in England rather than Bangladesh (336). For Samad, immigration disconnects him and his family from their roots. You make "a devil's pact when you walk into this country.... where you are never welcomed, only tolerated" so that "your children are unrecognizable" and "then you begin to give up the *very idea* of belonging" (336-7). In his own displacement and his disappointment in his sons, Samad turns to the only thing he knows to be certain: his connection to his ancestor Mangal Pande and that ancestor's role in imperial history.

Samad's reverence for his ancestor's act of rebellion colors his actions during the war and his desires for his children. He becomes bitter at the loss of his hand in part because it means that he cannot answer the call of his ancestors; thus, he needs to atone for his inaction by killing Dr. Perret. For Samad, history is what matters, and one cannot ignore the past. Samad criticizes the

eugenics of the Nazis because it is an attempt to control the future. Talking to Archie about Perret, he asks:

Do you know who this man is, Jones? ... He's a scientist, like me - but what is his science? Choosing who shall be born and who shall not - breeding people as if they were so many chickens, destroying them in the specifications are not correct. He wants to control, to dictate the future. He wants a race of men, a race of indestructible men, that will survive the last days of this earth. But it cannot be done in a laboratory. It must be done, it can only be done, with faith!... Men like him believe that living organs should answer to design. They worship the science of the body, but not who has given it to us! He's a Nazi. The worst kind. (100)

Samad makes the correlation between Nazi eugenics and Marcus Chalfen's FutureMouse© explicit years later when he urges Magid to give up his support of Chalfen's work: "Marcus Chalfen has no *right*. No right to do as he does. It is not his business. It is God's business. If you meddle with a creature, the very *nature* of a creature, even if it is a mouse, you walk into the arena that is God's creation. You infer that the wonder of God's creation can be improved upon. It cannot. Marcus Chalfen *presumes*" (376). In Samad's argument against the FutureMouse© and against the experiments of Nazi doctors like Dr. Perret, he asserts that it is only God who is allowed to decide the DNA sequence of a creature. For Samad, both his ancestry and his faith define who he is. In Samad's estimation, his ancestor-worship of Mangal Pande is natural because given by God, but to imagine that his identity is constructed by anyone other than God is blasphemy. What Samad's assertion does is to ignore the ways in which his worship of his ancestor reifies notions of difference between him (and his ancestors) and the English who he now lives among. His children's rejection of their heritage, and in particular Magid's embrace of

Marcus Chalfen's work, is a rejection of these very historical categories that would exclude them from full participation in English society.

In the context of the weighted histories of Samad, Irie, Millat, and Magid that construct them both as inheritors of the immigrant past but also as expressions of an exotic difference from the English characters of the novel, Archie's confidence in his own position within society is remarkable. We are introduced to Archibald Jones before any other character in the novel, and it is only in hindsight that we realize how little control Archie as an individual exercises over his own life. Nevertheless, as an Englishman, he relinquishes control over his life because he has never questioned how his fate seems to unfold to his benefit by the sheer certainty of his existence. In the story, we meet Archie as his life is about to end. On New Years Day, early in the morning, Archie is gassing himself in his car on Cricklewood Broadway. But, as the narrator tells us "the thinnest covering of luck" was on Archie, and his attempt is disrupted by Mo Hussein-Ishmael because "life wanted Archie" (6). As we see as the novel progresses, Archie continues to rely on luck, characterized by his penchant for the toss of a coin to make major decisions.

We also see how, for Archie, "being a father was such a solid genetic position in his mind (the solidest fact in Archie's life), it didn't occur to him that there might be any challenger to his crown" (285). In Archie's certainty about parenthood and his reliance upon chance to make decisions, he is emblematically English. But unlike Archie, Alsana and Samad live a more precarious existence, unsure of their footing, as immigrants, as products of their history, and as residents of unstable geographies:

People who live on solid ground, underneath safe skies, know nothing of this; they are like the English POWs in Dresden who continued to pour tea and dress for dinner, even

as the alarms went off, even as the city became a towering ball of fire. Born of a green and pleasant land, a temperate land, the English have the basic inability to conceive of disaster, even when it is man-made. It is different for the people of Bangladesh, formerly East Pakistan, formerly India, formerly Bengal. They live under the invisible finger of random disaster, of flood and cyclone, hurricane and mudslide. (176)

While Archie's certainty might arise from having been born in a green and pleasant land, his surrender of personal agency to the toss of a coin that characterizes his life arises from a different uncertainty. When Samad and Archie discover the Nazi Dr. Perret at the end of WWII, Samad convinces Archie that he needs to be the one to kill him, because Archie stands for nothing: "Not for a faith, not for a politics. Not even for your country" (101). But Perret convinces Archie that his decision to kill him could reverberate in unseen ways. In response to the pressure of Perret's argument, Archie proposes that the fate of the doctor will lie with the toss of a coin. The doctor survives, but Archie's uncertainty about his decision translates into a lifetime of basing his decisions on chance.

The one certainty in Archie's life – that of being a father – never wavers. But his daughter seems to inherit the effect of all the uncertainty that Archie never bothers himself with. Some of Irie's uncertainty expresses itself through her discomfort with her body, which displays characteristics of both her English father and her Jamaican mother. Irie's grandmother is herself the daughter of a Jamaican and an Englishman, though she rejects such hybridity as a wrong, even disowning her daughter Clara for marrying an Englishman. She tells Irie "Black and white never come to no good. De Lord Jesus never meant us to mix it up. Dat's why he made a hol' heap a fuss about de children of men building de tower of Babel. 'Im want everybody to keep tings separate... When you mix it up, nuttin' good can come. It wasn't *intended*. Except you,' she

added as an afterthought. ‘You’re about de only good ting to come out of dat’” (318). No doubt Hortense would not approve of Irie’s Bengali-Jamaican-English child.

Irie is the one character of the novel who seems able to transcend both history and genetics to forge her own identity free of those constraints. She represents an opposition to the commonsensical genetic determinism that runs through the novel, embodied ultimately in the body of the Marcus Chalfen’s FutureMouse®. Her desire for Jamaica as a “place where things simply *were*. No fictions, no myths, no lies, no tangled webs” means that for her, homeland is a positive word in that it stands for a beginning (332). Irie’s construction of Jamaica as a place of truth where she can begin again is a kind of determinism just like the genetic determinism of Chalfen’s experiments. Not knowing which Iqbal twin her body “chose” for the father, Irie wonders: if her child was not “somebody’s child, could it be that it was nobody’s child?” (426). Her return Jamaica with her fatherless child, who “feels free as Pinocchio, a puppet clipped of paternal strings” (448), allows her to answer her own question about her daughter’s paternity. Her vision of the future is “a time, a time not far from now, when roots won’t matter anymore because they can’t because they musn’t because they’re too long and they’re too torturous and they’re just buried too damn deep. She looks forward to it” (437). Irie’s escape from the London she hated to her homeland of promise would seem to suggest that embracing both her history and the uncertainty of her daughter’s genetics creates the possibility at least of the very freedom that she craves in order to forge her own unique identity.

However, one might also suggest that Irie’s escape of history and genetics by returning to the homeland is merely wishful thinking on her part and such escape is never possible. As Nick Bentley suggests in his discussion of the construction of Englishness in the novel, there is a connection between the genetic heritage (or history) of Irie’s child and the genetically engineered

FutureMouse© in that both may, or may not, be able to transcend the history built into their genes. Like Irie's child, the FutureMouse© is "pre-programmed in its moment of artificial creation, and its genesis and confinement in laboratory surroundings emphasize the predetermined nature of its existence." In this programming, it reflects

a predeterminism that evokes much older forms of containment and authority. However, it ultimately manages to evade its predetermined narrative by escaping from the genetic scientists that have created it. This does not mean that it can evade its genetic codes (or by extrapolation) its genealogical heritage, rather that in claiming its stake for freedom it defies those who wish to contain it. (Bentley 500)

The problem with immigrant history and with the predetermined genetics of the FutureMouse© is that both are powerful forces acting on the future of the beings through which they operate.

Smith's novel seems to suggest that there is hope of transcending the genetic and historic determinisms that the novel expresses even while embracing that history. The mouse does escape in the end, but more importantly, its escape is presented in the novel through the narrative technique of alternative endings: "But surely to tell these tall tales and others like them would be to speed the myth, the wicked lie, that the past is always tense and the future, perfect. And as Archie knows, it's not like that" which is why Archie watches the FutureMouse© escape through an air vent with the final thought "*Go on my son!*" (448). In *White Teeth*, the body of the immigrant can be so heavily mediated through the representations of its genetic and personal history, that it makes the bodies of the English characters seem unmediated, freed from any history that might weigh them down.

Cosmopolitan Geographies in Bodies and Cities

Critical responses to *White Teeth* often remark on how the novel challenges ideas of Britishness by presenting the perspective of both immigrant and native-born English characters who struggle with what it means to be British.²⁷ For this reason, *White Teeth*'s setting in London is crucial to this novel's engagement with the question of the immigrant experience and belonging. London's role as the destination of choice for migrants to the imperial centre, from the Windrush docking in 1948 to the present day, has made the city a focal point for discussions regarding immigration. Flashpoints like Enoch Powell's "Rivers of Blood" speech (1968) take place on the streets of London. Even within Smith's fictional world, the racially marked rioting in response to Powell's speech or the protests against Salman Rushdie's *Satanic Verses* are events that have an impact on the character's lives in ways that draw attention to their positions within society. Alsana's dismissal of Powell's speech – "... that madman E-knock someoneoranother gave a speech that forced them into the basement while kids broke the windows with their steel-capped boots. Rivers of blood silly-billy nonsense" (Smith 52) – does little to diminish the harsh reality of the violence it engendered.²⁸ John Bell writes that Smith's novel successfully contextualizes the racial and cultural issues it raises because it focuses them through the city – London – "whose transnational dimensions and transhistorical connections are woven, in varied and surprising

²⁷ See for example, Tracy L. Walters' "'We're All English Now Mate Like It or Lump It': The Black/Britishness of Zadie Smith's *White Teeth*," Jonathan P.A. Sell's "Chance and Gesture in Zadie Smith's *White Teeth* and the Autograph Man: A Model for Multicultural Identity?" or Dominic Head's essay on *White Teeth* in *The Cambridge Introduction to Modern British Fiction*.

²⁸ Hortense Bowden's anticipation as a Jehovah Witness of the end of the world is similarly violent. She looks forward to the prophesied end on January 1, 1975, after the false promise of the end in 1914 and 1925; "they had been promised the entrails of sinners wrapped around the trunks of tress, and this time the entrails of sinners wrapped around the trunks of trees *would* appear. They had waited so long for the rivers of blood to overflow the gutters in the high street, and now their thirst *would* be satiated" (27). Hortense's conviction that rivers of blood will flow due to religious prophesy echoes Powell's conviction that they will flow because of racial (and national) miscegenation.

ways, into the fabric of its residents' lives" (226). Within the narrative, there is a tension between the first- and second-generation immigrants of the novel over the appropriate place that history, both personal and colonial, plays in creating an identity.

Some critics have suggested that *White Teeth* presents a positive vision of multiculturalism, pointing to the final scene with Irie and her mixed Bengali-Jamaican-English child as an optimistic vision of the future.²⁹ But *White Teeth* also questions this positive vision of a multicultural Britain through its depiction of the burden of history that weighs on the immigrants and their children in the novel. We see the legacy of history in the first encounter of Magid and Millat when they are reunited after Magid's years in Bengal. Although the brothers meet in a "blank room," they fill that room with personal, scientific, epistolary, religious and recorded history until they leave "that neutral room as they had entered it: weighed down, burdened, unable to waver from their course of in any way change their separate dangerous trajectories. They seem to make no progress" (Smith 382-4).

At this point in the narrative, the narrator describes the "Happy Multicultural Land" that "we" imagine resourceful immigrants enter as they leave their homelands, "free of any kind of baggage, happy and willing to leave their differences at the docks and take their chances in this new place, merging with the oneness of this greeanandpleasantlibertarianlandofthefree" (384). This adaptability expresses a kind of freedom from the past that replaces "the usual cast-iron sequence from cause and effect" that the past can impose on the present with a "more liquid and arbitrary relationship of analogy or serendipitous contingency" (Sell 29). Jonathan Sell argues

²⁹ An example of this celebration of multiculturalism can be seen in Tracey L. Walters's "'We're All English Now Mate Like It or Lump It': The Black/Britishness of Zadie Smith's *White Teeth*" despite the essay's attempts to problematize that multiculturalism. For Walters, Smith's novel is a multicultural novel because it does not privilege one narrative voice or experience over another and Irie's child "symbolises the promise of a multicultural raceless British society, where 'roots won't matter anymore because they can't because they mustn't because they're just buried too damn deep'" (321). Irie's child may symbolize a hope of a multicultural Britain, but the narrative suggests that Irie and her child are only free when they relocate to the Caribbean, the place where this positive vision of a multicultural future takes place (Smith 448).

that Smith's novel presents us with a vision of a society in which the heterogeneity of multicultural identity expressed by its members becomes itself a kind of homogeneity that empties signifiers like "British" of specificity beyond geographic identification because "the more multicultural and heterogeneous a society is, the more scope there is for a variety of different spurious identities to be defined and identified as belonging to that society" (41).

But the Iqbals are as intimately tied to their histories as they are to the genes that make up their bodies (or even the way those genes tie them to each other). Like their father, "the brothers will race toward the future only to find they more and more eloquently express their past, that place where they have *just been*. Because this is the other thing about immigrants ('fugees, émigrés, travelers): they cannot escape their history any more than you yourself can lose your shadow" (Smith 385). It seems that there may be a maximum capacity of heterogeneity that British society is capable of incorporating. Unlike the Chalfens, who can appear to be "more English than the English" after only a couple of generations, various Iqbals are repeatedly labeled with the erroneous "Paki" by people they encounter as they go through their day (167; 192), suggesting that identity might indeed be "consubstantial with pigmentation, or the culture which a particular skin colouring might metonymically stand for" (Sell 31).

The connection between the fate written by the Iqbal boy's histories as sons of immigrants and their genetic history is made explicit, ironically, by the character in the novel who seems to have the most practical grasp on the way genetics works: Joyce. As a horticulturalist, Joyce thinks in practical terms about what will grow where in a garden. In an excerpt from Joyce's *The New Flower Power*, she warns of the dangers of creating a monoculture, a cloned species that contains no variety and is thus susceptible to disease. She writes: "cross-pollination produces more varied offspring, which are better able to cope with a

changed environment” so that such cross-pollinated plants (or children) “must be hardy and ever at hand, something only the truly mothering gardener can ensure” (Smith 258). Unfortunately for Joyce, she does not apply her knowledge of what works in the garden – cross-pollination – and what one must avoid there – monoculture – to her own children. In neglecting her own son’s development for a misdiagnosis of Millat’s religious activity as ADHD (358), she lavishes unnecessary attention on the cross-pollinated child while ignoring the one who is a “smaller version” of his father (260).

Joyce imagines herself a nurturing mother figure, but as the text and other characters in the story repeatedly observe, Joyce is only really interested in mothering other people’s children, and one might speculate that her belief that her own children are geniuses like their father because they share his genes allows her to overlook the ‘nurture’ part of their development. Other people’s children that she worries about are Magid and Millat, declaring to Irie at one point that the brothers need each other “like Laurel and Hardy, like Crick needed Watson –” (358). Pairing a comedy duo and the discoverers of DNA in order to explain why Millat should not be avoiding Magid suggests that Smith might be poking fun at the idea that genetics is a critical means to understand the boys’ relationship with each other. But Irie, who Joyce has been talking to when she makes the comparison, supplies a counter-example, suggesting that the boys might need each other “like East Pakistan needed West Pakistan” (359), which brings imperial history into the analogy, an imperial history within which Samad prides himself that his ancestor played a part. The desire of critics like Jonathan Sell or Tracey Walters to read the text as a positive vision of multiculturalism is underwritten by the sub-current of genetic determinism that Smith uses to suggest that genetic heritage (including phenotypic skin colour) may also play a significant role in determining the fates of the characters.

While the twins may be trapped by their shared history (and genetics) so that they seem to make no progress despite their efforts, their father embraces his history as the means for understanding his own position in the world. For Samad, Allah and history are the determining factors that inform his life. Samad's distress when Mickey refuses to hang Mangal Pande's portrait in O'Connell's pub indicates his strong identification with his great-grandfather despite Archie's claims that the history books all describe Pande as a traitor. Samad clings to the alternate history proposed by A.S. Misra that Pande was not a traitor, but a hero whose actions directly contributed to Independence in 1947 as a means of identifying himself with a significant figure in history. He counts because his great-grandfather counted, and "when a man has nothing but his blood to commend him, each drop of it matters, matters terribly; it must be jealously defended" (212). Samad's reliance on history as the defining feature of his identity, the identity of his children, and even the nature of his relationship with Archie, all suggest that imperial history can similarly disrupt the discourse of multiculturalism, preventing the integration of the immigrant into a multicultural society.

For the immigrants and their children in Smith's novel, the rootlessness of the immigrant's transplantation leaves them feeling unconnected to their society, even when they have some idea of the history that brought them to where they are. Irie Bowden, daughter of a Jamaican and an Englishman, struggles against her body, which exhibits physical characteristics that socially-mark her with her dual heritage. Her personal genetic history has given her both hair and physique that do not match her ideal so that she is "waiting instead for her transformation from Jamaican hourglass heavy with the sands that gather round Dunns River Falls, to *English Rose* – oh, you know her – she's a slender, delicate thing..." (222). At the outset of the novel, Irie views her roots as nothing to celebrate. They alienate her from the England that she wants to

be a part of: “There was England, a gigantic mirror, and there was Irie, without reflection. A stranger in a strange land” (ibid). Mollie Thompson notes that, “as Irie attempts to negotiate culturally opposing standards of beauty, the effect this has on her identity and her roots (both symbolic and figurative) is shown to be potentially destructive” (128). She destroys her hair in her attempt to straighten it and one might suggest that her outburst toward her family related below is an attempt to remake them into something more English than they are. Irie does finally learn to accept her body at the end of the novel; however, perhaps that is only because the history (or heritage) of her body is at least more clearly defined than that of her child.

In her interactions with the Chalfens, Irie learns that not every family drags its history out everyday to be held up against the current day’s activities in order to judge the relationship between the present and the past. She tells her family that she envies the other families on the bus who “don’t mind what their kids do in life as long as they’re reasonably, you know, *healthy*. *Happy*. And every single fucking day is not this huge battle between who they are and who they should be, what they were and what they will be” (426). No doubt Irie wishes to be like such people, and we suspect that she will attempt to raise her child to be free of the weighty family histories that the Iqbals and Joneses carry with them everyday.

Although Irie expresses a desire to be free of the family history that she claims is so often trotted out as a means of understanding the present, even in this character, it seems difficult to agree with Jonathan Sell’s claim that Zadie Smith “slip[s] the bonds of causality, by emancipating herself from historical determinism” in order to “inscribe identities which are no longer hung-up on historical injustices or immersed in somber, unproductive introspection” (33). Irie moves out of the family home in protest of “a long list of parental hypocrisies and untruths...

secret histories, stories you never got told, history you never entirely uncovered, rumors you never unraveled” (314). She finds this secret history at her grandmother’s house and

She laid claim to the past – her version of the past – aggressively, as if retrieving misdirected mail. So *this* was where she came from. This all *belonged* to her, her birthright, like a pair of pearl earrings or a post office bond. X marks the spot, and Irie put an X on everything she found, collecting bits and pieces (birth certificates, maps, army reports, news articles) and storing them under the sofa, so that as if by osmosis the richness of them would pass through the fabric while she was sleeping and seep right into her. (331)

Although she imagines that the “land of accidents” that Samad imagines with horror would be “like *paradise* to her. Sounded like freedom” (337), she also takes her child to Jamaica “clipped of paternal strings” (448). Irie’s ambivalence about her past, her embrace of her family’s Jamaican history, and her rejection of that history as a tool for analyzing the present suggests that Smith’s vision of a happy multiculturalism is multidimensional. In the narrative, history can both inform identity and constrain one’s assimilation into society, just as genetics can both define one’s identity and limit the possibilities for determinate self-expression because of that same identity.

Irie’s pregnancy after having sex with both Millat and Magid in the span of a half hour means that “what she didn’t know, and what she realized she may *never know*... was the identity of the father. No test on earth would tell her. Same thick black hair. Same twinkling eyes. Same habit of chewing the tops of pens. Same shoe size. Same deoxyribonucleic acid. She could not know her body’s decision, what choice it had made, in the race to the gamete, between the saved and unsaved” (426). Her child will share in the secrets that earlier enraged Irie. Looking from

Magid to Millat and back, trying to guess which one is the father of her child leads her to decide that it is impossible to trace that “fundamental moment when sperm met egg” so that “Irie’s child can never be mapped exactly nor spoken of with any certainty. Some secrets are permanent” (437). Not knowing the father of her child leads Irie to think that her child was “a perfectly plotted thing with no real coordinates. A map to an imaginary fatherland” (427). In Irie’s mind at least, her child’s genetics will no longer determine her fate.

Irie’s attitude toward the genetics of her child and its father rely on a construction of Magid and Millat as identical because of their genetic similarity. But the paths that Magid’s and Millat’s lives have taken have marked their bodies differently despite the identical genetic heritage of the twins. When Millat sees Magid after the latter’s absence of eight years, “Millat is astounded by the differences. The nose, the line of the jaw, the eyes, the hair. His brother is a stranger to him and he tells him so” (382). Marcus Chalfen’s contemplation of genotype and phenotype divergence as he prepares to meet Magid for the first time is more nuanced than Millat’s, but it also conceptualizes a similar fluidity in genetic identity:

It was incredible and sublime, even to him, that a boy should walk out of that tunnel with precisely the same genetic code as the boy he already know, and yet in every conceivable way be different.... Marcus lifted his head to look at the tall young man standing in front of him. It was Millat’s face, certainly, but it was cleaner cut, and somewhat younger in appearance.... What he lacked in the Byronic charisma of his brother, he seemed to gain in nobility, with a sturdier chin and a dignified jaw. These were all needles in haystacks; however, these were the differences you notice only because the similarity is so striking. (349)

Marcus's recognition of Magid as he steps from the aircraft returning from Bengal arises from knowing his twin, but Marcus reaches for something more, thinking that his recognition of Magid is a meeting of the minds, a shared solidarity in their commitment to logic and rationality. Marcus's wonder at Magid's unwavering stride across the floor toward him confirms his belief that the two of them must be "twinned like each side of an equation: logically, essentially, inevitably" (350). But Magid's recognition of Marcus Chalfen is not because of their shared ideals; rather, Marcus is the only white person waiting for the flight full of brown people, coming to the metropole from the former colony. Here it is Marcus's body that identifies him, not as a family member or friend, but as representative of the English capital at which the travelers have arrived. This moment of recognition (or mis-recognition) in the novel demonstrates one of the primary means of mediation of bodies, that is, by how they are read and recognized by others.

Just before this moment of recognition/mis-recognition, the narrative explores the fear that inheres in this bodily difference that both the twin's different life paths have created and the difference that leads Marcus to ascribe an intimate connection to one that is only skin deep. As Marcus Chalfen waits in the airport for Magid, he meets a girl reading his book: *Time Bombs and Body Clocks: Adventures in Our Genetic Future*.³⁰ The girl in the airport tells him that

you've got to be *seriously* naive if you don't think the West intend to use this shit on the East, on the Arabs. Quick way to deal with fundamentalist Muslims.... I mean, they talk about progress... They talk about leaps and bounds in the field of medicine yada yada

³⁰ In the title of Chalfen's book, we hear echoes of so many other popularizations, and even serious engagements with the genetic technologies he describes. The bookshelves today are filled with books like *Brave New Worlds: Staying Human in the Genetic Future*, *Liminal Lives: Imagining the Human at the Frontiers of Biomedicine*, *Redesigning Humans: Choosing our Genes, Changing our Futures*, or *Our Posthuman Future: Consequences of the Biotechnology Revolution*. These echoes invite the reader to consider Smith's novel as a fictional contribution to the same impulse of wanting to understand the implications of these technologies.

yada, but bottom line, if somebody knows how to eliminate ‘undesirable’ qualities in people, do you think some government’s not going to do it? (345-6)

Her reaction confuses Marcus, who cannot understand how the girl can be worried about “mindless human clones, genetic policing of sexual and racial characteristics, mutated diseases, etc.” because he did not even write about human eugenics in the book. He cannot understand how people “seemed unable to think of an animal as a site, a biological site for experimentation into heredity, into disease, into mortality. The mouseness of the mouse seemed inescapable” (346).

The popular response to the FutureMouse© – the inability to see the mouse as anything other than a mouse – is mirrored in Chalfen’s mis-recognition of the mouse as only “a biological site for experimentation.” It is Chalfen who is short-sighted in not being able to see the mouse *as a mouse* as well as part of his experimental design. For Chalfen, his work in recombinant DNA is what it is and no more. But the “mouseness” of the FutureMouse© is the point. It is an animal, like the human animal that this novel has shown can be just as readily exploited. What Chalfen overlooks in using the mouse a site for experimentation is that the mouse must die for the experiment to succeed. In Smith’s novel, it would seem that the “mouseness” of the mouse is just as important as the “humanness” of humans, for without that consideration, the human can also be considered as a utilitarian site for experimentation, as “airport girl” suggests. Ignoring the “mouseness” of the mouse is an instrumental view of the animal, and when applied to humans, it contravenes the Kantian categorical imperative that people are not means, but ends in and of themselves. The “mouseness” of the mouse extrapolated to human genetics in the popular imagination simply draws attention to the danger of Chalfen’s reductionist view of the mouse.

In the popularization of Chalfen's work, just as we can see on the book lists of today, the implications of that work are taken up by the public, including Smith's airport girl and extrapolated or followed to their logical, or at least potential, extremes. In the airport girl's invective, we hear the echoes of our own anxieties about these technologies, anxieties that are exacerbated by the attitude of scientists like Marcus Chalfens, who can divorce their experiments from the social and cultural implications of those experiments. *White Teeth* explores some of these implications, not just by introducing these biotechnologies, but presenting us with ways those technologies affect social and cultural practices in order to marginalize some of the humans who occupy the contemporary world. Smith's novel tells us that we do not even need to develop the actual ability to make clones or other genetically-modified citizens to use biotechnologies to marginalize others; we already have the attitudes toward tradition, roots (including genetic ones), and the notion of good and bad genes that such biotechnologies simply make evident.

CHAPTER 2 The Biotechnologically-Determined Posthuman

From the moment cyborg became a word, it signaled a complicated relationship between bodies and souls.

Alison Muri *The Enlightenment Cyborg: A History of Communications and Control in the Human Machine, 1660-1830*

Simply as a consequence of having the necessary tools available, we've begun to recast the body as a source of data rather than the seat of identity (let alone the soul).

Adam Greenfield *Everywhere: The Dawning Age of Ubiquitous Computing*

The two figures found in the title, *Cyborgs and Clones: Production and Reproduction of Posthuman Figures in Contemporary British Literature*, are created by biotechnologies that produce their posthuman bodies. Although the mechanical nature of the cyborg body on the surface appears to differ significantly from the biologically-manipulated body of the clone, as Alison Muri and Adam Greenfield suggest, the relationship between body, soul and identity is complicated by the human intervention into the production and reproduction of the human in these two kinds of figures. The clones in Kazuo Ishiguro's *Never Let Me Go* (2005) inhabit a world in which they are considered less than fully human because they have been bred to donate their organs and then die. Through the attempts of those who work with them to prove the clones are human because they possess souls, we find a suggestion that there is something essential to human identity. This chapter will argue that the clone as a posthuman figure forces us to consider if there is something essential that defines the human (for example, the idea of the human soul)

or whether definitions of the human are more accurately described as socially constructed, as it is in the case for marginalized humans like slaves.

As we saw in the last chapter, in *White Teeth*, although the Iqbals, Joneses, and Chalfens might represent the vexed relationship between immigrants and national belonging, there is no hint of doubt that they are human. But in Kazuo Ishiguro's *Never Let Me Go* (2005), there is a question about whether the students of Hailsham are the same as the humans that occupy the spaces outside of the boarding school. The storyworld of the novel suggests that for those British inhabitants of this alternate-history story, there is a difference in at least degree, if not in kind, between the students and other British subjects. However, the narrative presentation of Kathy's story suggests that there is no difference between the students and other members of their society, so that the viewer comes to detest the way in which the students are treated. The novel suggests that the posthuman is not something different in essence from the human; rather, the posthuman is a socially or narratively constructed idea of difference.

Biotechnologically-Defined Identities in *Never Let Me Go*

Never Let Me Go is narrated by Kathy H., a "carer," who describes how her childhood at a boarding school called Hailsham prepared her for her current role as someone who cares for organ donors. At first, Kathy's story seems fairly straightforward, but after a while, the reader begins to suspect that there is something strange about her story. The Britain in which Kathy works begins to look odd, suggesting this is an alternate history novel. The reader becomes gradually aware that Kathy is a clone, someone who is bred for the purpose of organ donation that will lead to her eventual death. As a "carer" she helps other "students" recover between their

“donations” until they “complete.” In this alternate Britain, the students of Hailsham are segregated from the rest of society, taught fine arts but not much else, and then finally in their twenties, begin the process of having their organs harvested.

Within the narrative, Kathy describes her friends, Ruth and Tommy, whom she cares for as they donate, recalling their childhood escapades at Hailsham. As Tommy’s final donation approaches, Kathy and Tommy latch on to a rumor that if a couple could prove they were really in love, they would have their donations deferred, so they seek out their old teachers in the hopes of making an application. Tommy brings some of his art to Madame and his former teacher because “it would help show [them] what [the clones] were like,” and since art “bares the soul of the artist,” their art will prove that they are in love (Ishiguro 254). It is then that they discover Hailsham was a failed experiment to prove the clones’ humanity and put a stop to the harvesting of organs by this method. In the story, in which cloning was made legal in the 1970s of this alternate history, we gradually come to understand how tragic Kathy’s and her friend’s lives are as they grow up, donate their organs, then die. The tragedy lies not just in their deaths, but their complicity in their deaths, passively accepting their role in the society of the novel.³¹

Many reviewers, and Ishiguro himself, have disavowed the importance of the clones to *Never Let Me Go*, suggesting they are incidental to what the story is really is about: people and their hopes, loves, fears, and relationships. In a review in the Guardian, John Harrison describes the book as a story “about the steady erosion of hope. It’s about repressing what you know,

³¹ This passivity is characteristic of the three friends: Kathy, Ruth, and Tommy, whose stories comprise the bulk of the narrative. One might note that of the three, Tommy, the lone male, is the one who expresses fits of anger as a child (which could be read as rebellion against his fate) and whose artwork is non-conformist, a suggestion that the clones’ response to their predicament might be gendered. Certainly, Debora Battaglia’s suggestion that male clones in the movies “have a productive function that the females among them are denied *other than as parts*” (502) would suggest that there is a strong gendered representation of clones in popular culture. However, *Never Let Me Go*’s focalization through Kathy and Tommy’s eventual acceptance of his fate make a gendered reading of the clones’ response less powerful than a reading that focuses on the shared inhumanity of their treatment, regardless of their gender. This chapter will focus on a reading of the clones’ position as a group although I recognize that additional work on the gendered nature of the clones’ treatment is possible.

which is that in this life people fail one another, grow old and fall to pieces” and that “Ishiguro's contribution to the cloning debate turns out to be sleight of hand, eye candy, cover for his pathological need to be subtle.” According to Katrina Onstad, Ishiguro’s use of a clone as narrator was simply a plot device that allowed him to isolate the student protagonists in a rural English boarding school (“Send in the Clones”). In this view, the fact the students are clones is irrelevant to the story. But like the butler in Ishiguro’s other novel of isolation, *The Remains of the Day*, the nature of the narrator’s reminisces about her life, depend on her position. As a clone, she is helpless to determine her own fate, so that her narration of her life is marked by a certain hopelessness or fatalism as she weaves the story of her life.

Further, the clone plot device allows the narrative to pose questions like “If you’re a clone, are you still human?” Reading Kathy’s story, the answer seems a resounding “yes”; however, the clones’ treatment in the novel clearly indicates that other characters do not think of the clones as fully human. It is only those who ran Hailsham, Madame and Miss Emily, and others who thought like them that consider the students, if not human, at least deserving of humane treatment. Miss Emily tells Tommy and Kathy that they challenged the way the donations program was run by arguing that “if students were reared in humane, cultivated environments, it was possible for them to grow to be as sensitive and intelligent as any ordinary human being” (Ishiguro 261). The euphemisms of the narrative and Kathy’s resignation to her role in this society are designed to disguise the horror of the clones’ status as nothing more than “creatures” supplying medical science; however, they only serve to amplify it (ibid.).

Ishiguro suggests that he chose to use a clone as narrator because it is a figure in contemporary literature that can perform a function that literature has conducted over and over again, as he explains for the Guardian Book Club:

...as soon as you get a character who's a clone or a cybernaut, or a supercomputer, you need to ask, "is it appropriate to respond to this character as though it were a human being?" and then paradoxically it raises these very ancient questions rather than futuristic questions that literature has asked for years and years and years. Questions like, "So what does it mean to be human?" "What does it mean to have a soul?" And, "If you know why you were designed and created do you have an obligation to fulfill the purposes of that design, or should you go your own way?" These are very fundamental questions that have been asked throughout literature. In things like Dostoevsky or Tolstoy, characters could go on for pages and pages debating these sorts of things.

What Ishiguro identifies as the fundamental question of literature is what it means to be a human.³² His novel suggests that the clones' bodies are more than just vessels for the organs they will donate, but that they might house human souls despite the fact that they are simply copies of their "possibles" (the original humans they copy). Because our conception of what it means to be human often relies upon a perceived naturalness to the body, including its reproduction, the humanity that Kathy and her friends demonstrate questions this perception.

Although the clones are central characters of the novel, Ishiguro suggests that the novel is better understood as a metaphor for the human condition: "I thought the book could ask how cruel can a society become," says Ishiguro. "That cruelty is almost inadvertent. It's not out of malice, but we stumble into heartlessness to make our own lives more comfortable. To some extent, you can say we have that kind of society now" (Onstad). Margaret Atwood's review of

³² This notion that there are 'eternal questions' that literature asks is echoed in Alison Muri's discussion of the cyborg in literature. Muri suggests that the cyborg, and more generally high technology, should be understood as a continuity with the past, specifically because these continuities with the past are "expressions of our quest to understand our communications, our bodies, and our humanity" (Muri 8). Ishiguro's question of whether created beings have an obligation to fulfill their design, we also see replicated in the Forged doctrine of Form and Function in *Natural History* in the final chapter.

the novel also focuses on its cruelty; however, she views the fact that the students are clones as essential to the plot. Although she notes that the novel tells us nothing of the process of creating clones or harvesting their organs, we do know that the society of Ishiguro's novel is one in which there is no controversy about the practice: "We assume—though it's never stated—that whatever objections might have been raised to such a scheme have already been overcome: By now the rules are in place and the situation is taken for granted—as slavery was once—by beneficiaries and victims alike" (Atwood "Brave New World").

The horror of the novel is not that this is an alternate universe, but that it has the potential to become our universe, or as Atwood's analogy with slavery indicates, to return us to a past we wish to leave behind. Atwood also wonders if we are already taking the kinds of steps that could produce such a society: "the children of Hailsham are human sacrifices, offered up on the altar of improved health for the population at large. With babies already being created with a view to their organs—help for an afflicted sibling, for instance—the dilemma of the Hailsham 'students' is bound to become more general. Who owns your body? Who therefore is entitled to offer it up?" (ibid.)³³ In the novel, the students' bodies are not their own because they are created for a particular purpose, but the question posed by Kathy's narration is what this situation produces: has this society created people without souls, or is this a form of genocide against a group targeted for termination simply because they are different from the other humans in the novel? Genocide, while a horrendous act, does not raise the same questions about the nature of the clones as does the possibility that the clones have no souls. In popular conception, the human is

³³ Similar questions are being asked in contemporary medical literature, specifically around organ transplantation. As Marvin Mirsky notes in his review of Ishiguro's novel "the demand for healthy organs... has become all but overwhelming" (629). The question "What Body Parts Do We Owe Each Other?" in the paper of the same title by Rothman et al. suggests that at least in the United States, the perception among organ donors in live-donor situations (i.e. kidneys) and the lack of centralized structures to ensure more organs are available, means the answer is that the individual and only the individual gets to control his or her own body (and its parts).

characterized by something more than just a body, and if the clones are nothing more than bodies, that suggests that naturally-conceived humans might also lack a special characteristic that sets them apart from animals. So the question of how we might get to the society depicted in this novel is intimately connected to this question of who controls the bodies in the story (and what is the nature of those bodies).

In the final confrontation scene of the novel, Kathy asks Miss Emily, one of the guardians of the now defunct Hailsham, why their best artwork was always taken away from them for Madame's gallery. She asks, "Why did we do all of that [art] work in the first place? Why train us, encourage us, make us produce all of that? If we're just going to give donations anyway, then die, why all those lessons? Why all those books and discussions?" (259). Miss Emily answers "We took away your art because we thought it would reveal your souls. Or to put it more finely, we did it to *prove you had souls at all*" (260). This final scene gets at the heart of the suspicion that in human cloning, in creating a duplicate of a person, only the body is doubled, and something essential, the soul, the human spirit, is not duplicated as well. At the same time, Kathy's question and her puzzlement at the idea that anyone might think she didn't have a soul suggests that Madame and Miss Emily's argument that a humanely raised clone would grow up to be as "sensitive and intelligent as any ordinary human being" (261) was a valid one. For Kathy and Tommy, the privileges of Hailsham don't seem to be privileges, just their "God-given" right to be treated as human beings (265).

Ishiguro's clones just want to continue existing; unlike their guardians, they don't care (or aren't even aware) of the debate about whether they have souls or not. But their potential lack of a soul, this emptiness within the hollow shell of the clone, presents a threat to those humans that make up the dominant culture. The clone is able to "pass" as a human, hiding his or her

potential non-humanness in the crowd, which is threatening, since as Valerie Smith suggests, systems of oppression like the one that marks the clones as subordinate to others depend on the idea that “one can distinguish between empowered and disempowered” persons (45). Ruth recognizes they are “passing” when she asks the others on their search for possibles: “Do you think [the gallery owner would] have talked to us like that is she’d known what we really were?” (Ishiguro 166) In their replication of their possibles, the original people on whom the clones are modeled, the clones embody a fear that the replicated human might be indistinguishable from the original. As Baudrillard suggests in *Simulacra and Simulacrum*, the clone “is an imaginary figure, which, just like the soul, the shadow, the mirror image, haunts the subject like his other... when the double materializes, when it becomes visible, it signifies imminent death” (95). The fear of the ordinary humans in Ishiguro’s novel is that the clone might be indistinguishable from the original, but also that the original may also be indistinguishable from the copy. The way in which the tide of public opinion turns against the operators of Hailsham demonstrates how this awareness of difference operates in the novel. Miss Emily identifies the “Morningside” Scandal as the reason support waned for the humane treatment of clones. The scandal emerged because of a scientist whose work was designed to create superior human beings. His work “reminded people...of a fear they’d always had. It’s one thing to create students, such as yourselves, for the donation programme. But a generation of created children who’d take their place in society? Children demonstrably *superior* to the rest of us? Oh no. That Frightened people. They recoiled from that” (264). In the society of the novel, people were much more ready to accept that the clones were inferior humans (or even not human), but the threat that superior humans might take their place in society was too much for people to bear. As long as bodies created by biotechnology are inferior, and regardless of “however uncomfortable people were about [the

clones’] existence, their overwhelming concern was that their own children, their spouses, their parents, their friends, did not die from cancer, motor neurone disease, heart disease” (263). But when biotechnology threatened to supplant the natural human body with superior ones, the fear that Miss Emily identifies emerged and the public turned away from recognizing the products of any biotechnologies.

The bodies of the clones in *Never Let Me Go* also are disturbing because of the nature of their lifespan. The clone’s non-reproductive origin is “unnatural,” but so also is its death in that the clone is dismembered piece by piece as its organs are harvested until it dies. The students’ bodies thus become little more than repositories for organs that will later be harvested in order to be transplanted into the people who count in this alternate history England.

For the reader, what is even more horrifying than the organ harvesting is the fact that even the clones accept that this is their role, as we see in the narrative of a minor childhood incident. Tommy has a terrible temper, which other students would try to trigger by teasing him when they were younger. One day in the cafeteria after Tommy had cut his elbow and had it bandaged, another student tells him “If it’s right on the elbow like that, it can *unzip*. All you have to do is bend your arm quickly. Not just that actual bit, the whole elbow, it can all unzip like a bag opening up. Thought you’d know that” (85). Since the students have been told since they were infants that they must be very careful with their health, this worries Tommy, who takes the warning seriously. Even after Tommy learns he’s been fooled, Kathy tells us that the notion of “unzipping” carried over to become a running joke among the students:

The idea was that when the time came, you’d be able to just unzip a bit of yourself, a kidney or something would slide out, and you’d hand it over. It wasn’t something we

found so funny in itself; it was more a way of putting each other off our food. You unzipped your liver, say, and dumped it on someone's plate, that sort of thing. (88)

Although the students are joking, imagining themselves as a storage bag which one can unzip in order to withdraw their organs, reinforces the social construction of the clones' bodies as objects divorced of any individual subjectivity. The way that Kathy talks about Tommy in particular reinforces this idea that the students are little more than spare body parts. On two separate occasions she refers to Tommy as a "spare part": on the first occasion, she sees Tommy sitting by himself after he and Ruth split up at Hailsham and she thinks that "since splitting with Ruth, [he] looked a bit of a spare part" (101). She later vocalizes this idea when she tells Ruth (who has gotten back together with Tommy) that she mistreats Tommy, leaving "him stranded, looking like a spare part" (125). In a very literal way, Tommy, like all the other clones, is a set of spare parts. But it is also interesting that within the students' circle, he is marginalized even further when he is not connected to another, as in a relationship, or through the exchange of artistic artifacts that the students trade four times a year, in which Tommy doesn't participate (16).

The ethical problem of the students' status is a fictionalized version of debates within medical ethics about the use of cloning for human health. Although no one is cloning whole human beings, the cloning of human organs for therapeutic uses suggests that it is a slippery slope that could lead to cloning whole humans, so that cloning organs presents liberal democracies with conflicting principles: as medical therapy, it promises to relieve human suffering, while at the same time it threatens human identity and integrity.³⁴ The dehumanizing potential of medical technologies and their challenge to a sense of identity is a common narrative

³⁴ In their analysis of news coverage following the cloning of Dolly the Sheep, Edna Einsiedel et al. suggest that scientifically, Dolly "brought closer the distinct possibility of cloning humans" and media coverage entertained the notion of a slippery slope to cloning humans with references to Huxley's *Brave New World* and the film *The Boys from Brazil* in which a Nazi scientist creates 95 young clones of Hitler ("Brave New Sheep" 315-19).

in discourses about genomics and the technologies that enable it to be applied to medicine.³⁵ The cloning of Dolly the sheep in 1997 is particularly distressful for many people because the cloning of mammals suggested that it would also be possible to clone human mammals.³⁶ Public responses to the news express two fears: that cloning cheapens human life, and that cloned humans will not be afforded the rights of other humans because they have been created for someone else's benefit, a violation of the Kantian categorical imperative not to treat others as a means to an end.

When Ishiguro declares that, "cloning was actually one of the last things to fall into place, but ... the controversy has effectively become my setting. You could fill the space with any breakthrough in science that seems to be running ahead of moral controls," he is right that the science that isolates the students did not necessarily need to be genetic engineering (Onstad). What he ignores however is the social implications of this particular scientific development. Cloning is a technology that generates important ethical questions that are specific to our understanding of ourselves and our categories of human, subhuman, and non-human. More so than, for example, the production of a genetically modified food, the genetic control of humans strikes at the heart of questions humans have struggled with throughout our long history,

³⁵ In "What Do You Think about Genetic Medicine?" Facilitating Sociable Public Discourse on Developments in the New Genetics" Ian Barns et al. report that lay people worry about the impersonal or dehumanizing effects of new medical treatments and a loss of sense in public health measures more than any other factor.

³⁶ With the news of Dolly's cloning, interested stakeholders quickly moved to construct statements regarding cloning technologies. The Federation of Gynecology and Obstetrics (FIGO) condemned reproductive cloning in humans on the grounds that it has a low success rate coupled with a high incidence of complications, as well as the potential for ongoing immune system problems in offspring (*Ethical Issues*), while the General Assembly of the Society, Religion and Technology Project declared it unethical because it "is a violation of the basic dignity and uniqueness of each human being made in God's image" and cloning is "an instrumental use of both the clone and the one cloned as means to an end, for someone else's benefit" (1997 *General Assembly Report*). In a further step, most countries enacted bans on human cloning, and limited the pursuit of related technologies. For example, in Canada, "An Act respecting assisted human reproduction" declared that "(1) No person shall knowingly (a) create a human clone by using any technique, or transplant a human clone into a human being or into any non-human life form or artificial device;... (c) for the purpose of creating a human being, create an embryo from a cell or part of a cell taken from an embryo or foetus or transplant an embryo so created into a human being" (Bill C-6).

including what constitutes full membership in the category of humanity, and the treatment of some segments of humanity as subhuman.

Marginalized “Clone”ials

The isolation of the clones from English society, their treatment as less than human, and even the efforts of Madame and other teachers at Hailsham are reminiscent of the kinds of attitudes and policies that English explorers often adopted toward the people whose lands they colonized, both in the colonies and when those colonials migrated to the imperial center. The clones, while suffering a more dire fate than most colonials, are also marginalized and excluded from participation in the British society within the narrative so that in some ways they function as an allegory of the colonial history of the English.

The novel begins with Kathy’s recognition of her privileged position within this underclass that serves the needs of unhealthy Britoners. She explains to her narratee that she is a Hailsham student “which is enough by itself sometimes to get people’s backs up” (Ishiguro 4), but of course she deserves such recognition because her donors “have always tended to do much better than expected. Their recovery times have been impressive, and hardly any of them have been classified as ‘agitated,’ even before the fourth donation” (3). What might be more telling of her prestige among the underclass “students” of this alternate Britain is her suggestion that when allowed to choose which donors to care for, she elects to choose her “own kind,” that is, others students of Hailsham (4). Kathy’s pride in her position as a favorite among the underclass of the clone recalls other characters in postcolonial literature like Dr. Azziz in E. M. Forster’s *A Passage to India* (1924), Saladin Chamcha in Salman Rushdie’s *The Satanic Verses* (1988), or

Abdul-Mickey of Zadie Smith's *White Teeth*. These characters readily accept the small advancements they are allowed in their subordinate positions within a postcolonial economy, where concessions are made to special talents or abilities without allowing them to rise above their station as subjects of the colonial (and postcolonial) regime.

Kathy's act of narrating her life puts her in a similar position to those that Ashcroft et. al suggest were given "imperial license" to write in the second stage of postcolonial literature where their very act of writing "in the language of the dominant culture [signals] that they have temporarily or permanently entered a specific and privileged class endowed with the language, education and leisure necessary to produce such works" (5). Certainly the emphasis on the arts in the education of the students at Hailsham identifies them as a privileged class among this marginalized group of organ donors.

When we consider some constructions of colonial subjectivity, we see similarities between the students and colonial subjects. In "Of Mimicry and Men," Homi Bhabha argues that the relationship between colonial subjects and colonizers is characterized by the way in which some colonial subjects occupy a position that is similar but also falls short of that of the colonizer; in Bhabha's words, "*almost the same, but not quite*" (86). Nineteenth century English observers of Indian culture often called for an education of the Indian subject, so as to create 'mimic men': subjects who might act as interpreters between the British and Indians. They would be "a class of persons Indian in blood and color, but English in tastes, in opinions, in morals and in intellect" (87) through an act of what Benedict Anderson calls "mental miscegenation" (91). These mimic men would never transcend their position as colonials; however, by acting as an intermediary class of civil servants, they would keep the imperial bureaucracy functioning smoothly, ensuring English success in their colonizing efforts.

As a go-between, the mimic men ensure that the colonial project progresses smoothly so that one might consider whether Kathy's act of narrating her life might also perform a similar bridging function. It certainly is clear that the students have a difficult time understanding non-clone culture and many of their actions are attempts to imitate what they see of that dominant culture. The wild goose chase in search of Ruth's "possible" in the seaside town arose out of Ruth's obsession with her "dream future" of working in an office (Ishiguro 143). Similarly, one of Kathy and Ruth's fights is over Kathy's annoyance that Ruth's interactions with Tommy are an imitation of a television series and "not what people really do out there, in normal life" (124). Of course Kathy doesn't have a good idea herself of what actually goes on outside of the controlled environments that structure the clones' lives; Ruth's criticism of Kathy is that she thinks "real families" operate by sticking together like the Hailsham students did, by not interacting with other people (*ibid.*). In describing these scenes, Kathy's narrative seems to address a non-clone audience, explaining to the reader what it was like to grow up as a clone, move to the cottages and then become a carer. At the same time, she directly addresses other clones as readers, as when she says things like "I don't know how it was where you were, but at Hailsham..." and then describes a part of her life (13). Kathy's narration of her life story to an audience that seems to consist of both clones and non-clones suggests that her interpretation of her experience is like that of Bhabha's mimic men in that she is representing her life in a way that accounts for both a clone and non-clone audience, just as the mimic men are educated to bridge the gap between colonizer and those who have been colonized.

Kathy's description of the students' education at Hailsham is that it is partial at best; they are told, but not told things. This partial education, with its emphasis on the fine arts: painting, drawing, and poetry writing, does not provide them with the means to appreciate fully their

position within society in the way that studies in history, geography or even the sciences might. The partial education of the clones also suggests their analogous relationship to some colonial subjects. When two students talk of becoming movie stars, Miss Lucy, a guardian who believes the children need to be made aware of who they are, tells them

... you've been told and not told. You've been told, but none of you really understand, and I dare say, some people are quite happy to leave it that way... Your lives are set out for you. You'll become adults, then before you're old, before you're even middle-aged, you'll start to donate your vital organs. That's what each of you was created to do... You were brought into this world for a purpose, and your futures, all of them, have been decided. (81)

This partial education does not provide them with the means to appreciate fully their position within society. In this way, they resemble the partially educated colonial that Bhabha writes about. In his 1792 treatise, East India Company chairman Charles Grant proposed that a partial education in Christianity and morals will produce a partial reform of the colonial subject which will “induce them to remain under [the] protection” of their British overseers (Bhabha 87). Like the colonial subject, the clone is best controlled through a partial education. In addition to portraying the clones like colonials, Miss Lucy's description of how their lives are set out for them makes the clones sound like Marcus Chalfen's FutureMouse© in that their lives and deaths have already been programmed.

The clones in *Never Let Me Go* are like colonial subjects because they are controlled by others, but they lack the one feature every colony has eventually exhibited, regardless of how violent or mild – that of resistance. Rather, the clones of Hailsham function as an allegory for good British colonial subjects, reticent, calm, and accepting of their fate. It is as if the novel is a

handbook for how to be a good subaltern, the kind who accepts his or her fate as subordinate instead of fighting it. If the subaltern were simply a quaint notion of subordination, a relic of an imperial age long since surpassed, the position of the clones within the British society of the novel would be less crucial to such an argument, but as Hanif Kureishi suggests

the whole question about what it is to be on this little island, on the edge of Europe, is up in the air. And so it seems to me that colonialism hasn't come to an end, you know. We're still thinking about it. Colonialism has entered all our heads, it's part of our minds. And we have to think about it when we think about what kind of country we want to live in.
(qtd. in McCabe 45)

Ishiguro's novel presents one kind of country, one in which the subordinate status of the clones makes evident similar issues that immigrants and other marginalized persons also face. It poses the question of what to do about a colonial legacy by displacing it into a fantastical realm that imagines one alternative.

The significance of using a clone as the narrator of this experience of the colonial becomes even clearer when one turns to Bhabha's description of the cultural space occupied by mimic men. He writes, "mimicry conceals no presence or identity behind the mask... The *menace* of mimicry is its *double* vision which in disclosing the ambivalence of colonial discourse also disrupts its authority" (88). The hollowness behind the mask, the absence of an identity behind the mimicry is the threat of the mimic man. In a similar manner, the clones can be rejected as members of that society only if the suspicion that there is nothing behind their mask or outer shell holds up. The whole reason the students spend hours and hours of their days creating art is so that their art can prove they have souls, that they have an interiority that would allow them to become part of the human race. To prove the students do have souls would prove

that their treatment is inhumane. It also suggests that it may not just be the clones that are empty shells and that there is nothing essentially special about the human animal in general.

In Ishiguro's alternate 1990s Britain, we see how the genetic determinism of the clone (as a copy rather than the original) accounts for how the clones are treated differently from other humans. The guardians' attempts to demonstrate the clones' humanity in order to overcome the genetic force of the clones' social status by displaying the students' artwork reveal their genetic bias. In the novel, art comes to stand as the marker of humanity. But for the students (or maybe it is the author), the true test of their humanity lies in their relationships; their ability to engage in all the activities that non-cloned humans do suggests these clones are as human as those who receive their organs.

This tension created by the students' mimicry of human authenticity is the reason the alternate 1990s Britain shuns their existence. Ishiguro represents Kathy (through her narrative) as lacking in emotion; for example, when Kathy describes the clones' sex lives, she says they are "a bit functional" (127). When she and Tommy decide to ask for a deferral of their donations shortly after Ruth's death, Kathy reasons that if they do not have sex, it would be a drawback to their request for deferral. She admits that "my worry was that it would show somehow, in a kind of lack of intimacy" (238). But despite trying to make their relationship as passionate as possible, they both experience an overwhelming feeling that it is all too little too late. Kathy suggests their relationship might have been different if it had begun at Hailsham,

or maybe it had to do with how sometimes, even after we'd done it really well and were lying in each other's arms, bits of what we'd just done still drifting through our heads, Tommy would say something like: 'I used to be able to do it twice in a row. But I can't any more.' Then that feeling could come right to the fore. (239)

The mechanical nature of this love affair reveals more than the student's art that they might be different from other people.³⁷ The clones' inability to feel the passion of their love affair in *Never Let Me Go* echoes Francis Fukuyama's suggestion that it is our emotions that are the 'factor X' which makes us human (149). This suggests that it is not that the clones in the novel do not have a soul that makes them inhuman; it is their lack of emotion, their lack of passion about their own position within society. Of course, their emotionally-stunted nature may also be a result of their upbringing and their impending doom so that the symptom of their oppression becomes the means by which they are marked as different and thus worthy of that oppression.

The novel's final scene in which Kathy confronts her former teacher gets at the heart of the question human cloning raises: the possibility that in creating a duplicate of a person, only the body is doubled and something essential is not duplicated as well. Whether this essential feature, what might be called a soul or the human spirit, exists or not, the idea that the human is more than just a body persists. The potential lack of a soul in Ishiguro's clones, this emptiness within the hollow shell of the clone, marks the clone as marginal in the society of the novel. Just as behind the mask of the mimic man there lies no identity, the clone is an empty signifier of the human. The clone is able to "pass" as a human, hiding his or her non-humanness in the crowd. One of the fears in *Never Let Me Go* is that there is no soul within the clone, which keeps the clone outside of society. The other fear is that there is indeed no difference between the clone and the humans in the narrative, which either suggests that we humans also do not have souls or

³⁷ The emotionlessness of the clones in *Never Let me Go* is similar to the emotionlessness of the androids in Philip K. Dick's "Do Androids Dream of Electric Sheep" (and in the movie *Blade Runner* based on the same story). Scott Bukatman notes that in traditional science fiction, emotion is the defining human quality so that "never do humans encounter *more* emotional creatures than themselves" (270). The similarity between the androids' and the clones' inability to feel empathy or other emotions makes both seem inhuman and it is worth noting that the androids of *Blade Runner* are constructed for a particular purpose with a limited life span just as the clones in *Never Let Me Go* are limited in their prospects. It is also possible to compare Kathy's emotionlessness to that of the narrator in Ishiguro's *The Remains of the Day*; in that novel, the narrator is not a clone, however he does share with Kathy a complicity in his own dehumanization, suggesting that a lack of emotion may be a function of dehumanization rather than a result of being a created being.

that both clones and ordinary humans do have souls and thus the treatment of the clones in the story is inhumane. Whether the clones are lacking souls or all humans are, the presence of the clone challenges us to consider how the human is defined and whether the notion of a soul is necessary to that definition.

Origins and Belonging

One of the ways the question of whether the clones of *Never Let Me Go* are human can be answered is by asking whether or not they are accepted as members of the human community. If we accept Benedict Anderson's suggestion that communities are socially constructed through an imagined solidarity and that this imaginary nature helps to determine where the boundaries of the nation are drawn and who is included within those boundaries (7), then the human community is similarly constituted by a shared notion of who belongs and who does not. The segregation of the clones at Hailsham in *Never Let Me Go* excludes them from their society and while they form their own communities (at Hailsham and at the cottages) they do not interact with the ordinary humans outside those communities. Kathy's describes her life as a carer as one of solitude: "driving across the country, centre to centre, hospital to hospital,... no one to talk to about your worries, no one to have a laugh with" (207), and Miss Emily even suggests that speaking to Tommy and Kathy is "against regulations," not that she much cares for the regulations of the shadowy 'they' who control the lives of the clones now that Hailsham is closed (259). If the clones are human, then they are an isolated set of humans, first raised in a boarding school like Hailsham, then sent to the cottages where they fend for themselves with minimal outside interaction, then becoming carers and eventually donors themselves.

Beyond the suggestion that isolation constructs the clones as perhaps less than human, they are definitely defined by their bodies, as we saw in their discussion of unzipping body parts or Kathy's persistent use of "spare parts" as a way of describing Tommy's interaction with the others. From a very early age, the students are aware that their health is of critical concern to their guardians, with weekly medicals and lectures about staying healthy (13). Many of those lectures were about avoiding smoking, and as Miss Lucy explains to the students, "You're... *special*. So keeping yourselves well, keeping yourselves very healthy inside, that's much more important for each of you than it is for me" (69). What is interesting about this discussion is that the students themselves are reluctant to enter into these kinds of conversations because those conversations were embarrassing since the guardians "became so awkward whenever we came near this territory" (ibid.). Although the students know they are different and have a vague idea that the donations lie in their future, it is through the guardians' discomfort that we understand how these students are viewed as nothing more than bodies, or body parts, by the other humans in the novel, even the guardians who are raising them.

The bodies of the clones in *Never Let Me Go* are mediated by the cultural milieu in which they operate, revealing how identity can be written on the body in ways that define and categorize those bodies. The students know they are modeled on people living outside of the very limited scope that the students occupy in Hailsham, the cottages, and the donation centers. They imagine that sharing their genetic material with their models, or "possibles" as they call them, also means they share the characteristics and potential of those models: as Kathy explains to her listeners, "all of us, to varying degrees, believed that when you saw the person you were copied from, you'd get *some* insight into who you were deep down" (140).

For example, Ruth begins to talk about working in an office after she moves to the cottages, so when two of the other students spot what they think is Ruth's "possible" working in an office, they go to check it out. They find the woman and after agreeing that she could be Ruth's "possible" they follow her, but proximity begins to break down their conviction and as Kathy tells us, "bit by bit, something started to change. It did for me, and I could tell it was happening for the others... now, in that gallery, the woman was too close, much closer than we'd ever really wanted. And the more we heard her and looked at her, the less she seemed like Ruth" (163). The students' gradual loss of faith in Ruth's "possible" could have been simple naïve and youthful misperception, but their disappointment also suggests that even with the same genetics, Ruth and her possible would not look alike because an individual is more than just her genetic makeup. Tommy, the student who most often seems an outsider, is actually the most prescient, saying "I don't see how it matters. Even if you found your possible, the actual model they got you from. Even then, I don't see what difference it makes to anything" (165). But the suspicion that genetics does determine one's role in life is a strong one, and Kathy becomes convinced that her sexual urges mean she was modeled on an adult entertainer or erotic model. She searches the faces of models in pornographic magazines in the hope that she would find her own face reflected there so that it would "kind of explain why I am the way I am" (181).

The disappointment that both Ruth and Kathy feel in not finding their "possibles" leaves them rootless, unable to account for how they got to where they are, and unsure of what their future should look like. Certainly Ruth's vision of the future is the bleakest; she suggests "we're modeled from *trash*. Junkies, prostitutes, winos, tramps. Convicts, maybe, just so long as they aren't psychos. That's what we come from. We all know it, so why don't we say it?" (166) The clones don't see a future for themselves, and the story suggests that this may be because they

have no knowledge of their past, personal or genetic. Their lack of history, more so than their future as donors, makes their future meaningless. Without any sense of connection to the rest of the world, they drift, unable to form meaningful relationships, even with each other, living in a world that only marginally echoes the one that we know.

The genetic basis of the clones' conviction that knowing who they are modeled on will give them some insight into who they are suggests that the marginalization of the clones depends in part on a detectable difference in their bodies. Ruth's suggestion that the clones are "passing" as they interact with other people reinforces this bodily difference and provides a potential means for understanding the clones' isolation through the lens of theories of racial difference. The isolation of the clones rests on the notion that there are differences that are detectable and that do matter. The allegory in *Never Let Me Go* suggests this difference might be coded as racial. In contemplating this difference as racial, I am relying upon Paul Gilroy's definition of race as not being grounded in the physical differences that mark the body as raced but the "impersonal, discursive arrangement, the brutal result of the raciological ordering of the world, not its cause" (*Postcolonial Melancholia* 39). Considering race as a category defined not by the body itself, but the way that bodies are organized, or ordered, in the world, focuses on the result of racial categorization rather than its cause. This focus explains how in the light of scientific claims that race does not exist at the level of DNA (and therefore the body) race ordering still takes place. At the same time that race is an ordering not a cause, the racial identity of a body, its identification as black, brown, hybrid, cloned, or anything else other than white, plays a large role in determining if one is subject to such ordering. What Gilroy's definition allows us to do, is to consider the clones in *Never Let Me Go* as racialized creatures, not simply because their DNA is a replica of someone else's, but because they are segregated, isolated, and treated differently than

other people within that fictionalized England in a way that organizes them similar to how other racialized bodies are ordered.

Defining race as a result of this discursive categorization, instead of its origin also connects racial categorization to its origins in colonial ventures. As Gilroy explains:

The attachment to race enlisted and synchronized institutions, power, and beliefs, both religious and scientific, in the service of a colonial authority, which was not to be confined to the colonies but looped back into the biopolitical administration of metropolitan spaces and populations that were charged with a novel world-historic mission... the 'race' idea is powerful precisely because it supplies a foundational understanding of natural hierarchy on which a host of other supplementary social and political conflicts have come to rely. *Race remains the self-evident force of nature in society.* (7-8; emphasis added)

It is as a self-evident and natural force that the society in which Kathy H. and the other clones live can isolate them, educate them, and then use them for spare body parts. If the clones are constructed as a race that is subordinate to the dominant one, they can be used in ways that full citizens cannot. They thus become socially irrelevant within the ordering of the nation. That the clones are envisioned as a race separate from those to whom they donate their body parts is revealed in the way that the experiment at Hailsham to prove that the clones have souls and are thus human, sparks a backlash against the education of clones. Earl Ingersoll elegantly explains how attempts to educate the students disrupted their construction as a different race (or even species) of being:

[Madame] and the other guardians worked against the more popular prejudices against these clones, namely that they were not really "human."... Because Miss Emily and

Madame were well intentioned, they assumed the demonstration of this humanity would eventually lead to better conditions for all the clones, and not merely those at Hailsham. Not surprisingly, the effect was just the opposite, because it forced their society to acknowledge that the desire to extend life for their loved ones and for themselves was not so much a matter of picking apples off trees but the grisly business of vivisection which earlier generations had condemned as horrible even when practiced on animals. In a sense, it was as though the Hailsham experiment was demonstrating that chimpanzees and gorillas have something very similar to the souls that humans have consistently believed were a monopoly of homo sapiens [*sic*]. (50)

As the boundary between clones and recipients that Ingersoll describes is identified, it draws attention to the artificiality of that boundary's construction. The more "human" the clones become, the more evident their mistreatment becomes so that Hailsham draws attention to the marginal position of the clones within their society.

Similarly, there is a moment in *Never let Me Go* where the clones' bodies are marked out as different in a way that draws attention to their bodies as constructions, created for the purpose of donation, not as bodies of independent, fully-realized humans. The students decide they will swarm Madame the next time she comes to the school to collect their artwork to test the theory that she was afraid of them. They do so, and Madame freezes, afraid of them "in the same way someone might be afraid of spiders" (35). For Kathy, this is a defining moment:

...thinking back now, I can see we were just at that age when we knew a few things about ourselves - about who we were, how we were different from our guardians, from the people outside - but hadn't yet understood what any of it meant. I'm sure somewhere in your childhood, you too had an experience like ours that day; similar if not in the actual

details, then inside, in the feelings... So you're waiting, even if you don't quite know it, waiting for the moment when you realise that you really are different to them; that there are people out there, like Madame, who don't hate you or wish you harm, but who nevertheless shudder at the very thought of you - of how you were brought into this world and why - and who dread the idea of your hand brushing against theirs. The first time you glimpse yourself through the eyes of a person like that, it's a cold moment (36).

Kathy's address to the reader: "I'm sure someone in your childhood, you too had an experience like ours" invites the reader to remember their own experience of alienation, as seen through the eyes of another, or at least to imagine what it might feel like to experience that kind of alienation. In Madame's reaction, we see how her knowledge of the clones and what their bodies represent colors her reaction to them. From her perspective, the clones are walking, talking experiments, or lab animals, not human children playing a prank. Those who approach the bodies of the clones in *Never Let Me Go* imagine they see there, or project onto those bodies, their own interpretations of the clones' relative proximity to animality and humanity.

Enslaved versus Universal Cosmopolitan Bodies

The position of the students in *Never Let Me Go* gives us a glimpse into how human identity and autonomy are eroded by constructions of the human body that imagine it as nothing more than a collection of interchangeable parts available for medical therapies. It also acts as stimulus for discussions about the implications of allowing the cloning of human organs, specifically, how this kind of harvesting of organs in the novel removes the clones from their society in ways that invite analogies to slavery. In his extensive study of slavery and social death, Orlando Patterson

identifies slavery as a deferred death sentence (often of a violent death) that relies upon the social death of the slave. The social death of the slave rests on the slave's natal alienation from his familial and social roots, and the powerlessness of the slave over his own body makes the slave a dishonoured person. Thus slavery may be defined as "*the permanent, violent domination of natively alienated and generally dishonored persons*" (13). Adbul JanMohamed in *The Death-Bound Subject* takes Patterson's definition of the slave a step further, distinguishing between Giorgio Agamben's 'bare life' of the slave and the sovereignty of the lynch mob which enacts the violence of the deferred death. JanMohamed extends the physical death of the slave to the socio-political, distinguishing between the slave's body as "flesh" and the "body" of a sovereign subject. Further, the living "flesh" can readily become "meat" in death, the "zero degree of social conceptualization" that Patterson's social death points toward (10). Significantly, the sovereignty of the lynch mob over the "flesh" of the socially dead is extra-legal, just as the violence enacted against the immigrants in Smith's novel (for example, in Alsana's narrating of the rioting in response to Powell's speech), and against the clones through their donations, is extra-legal.

For the clones, their social death does not even need to be reinforced by the violence of the sovereign mob because their bodies are legally and conceptually imagined to always be no more than "flesh" which is destined to become merely "meat."³⁸ In Madame's response to the children, we might then understand her fear as not just a fear of the animality of the clones, but also the fear of the zombie, that is, "meat" come to life. The fact that the clones look like humans does not negate their status as socially dead "flesh" that will one day become nothing more than

³⁸ The social death of the clones that makes it easy for them to move from living "flesh" to dead "meat" is echoed in the literature of organ donation. See for example, Vera Kalitzkus's "Neither Dead-Nor-Alive: Organ Donation and the Paradox of 'Living Corpses'" for a discussion of the culturally and historically constructed nature of the boundary between life and death, or Norman Fost's "Reconsidering the Dead Donor Rule: Is it Important That Organ Donors Be Dead?" for an argument the public may be more accepting of donations from persons still considered alive than previously imagined.

“meat.” The mimicry of the clones is a reflection of their status as not-quite-human so that the novel enacts the dual fears regarding the clone: that the clone does have a soul and thus its treatment is akin to murder, or that the clone does not have a soul and this soulless clone will be undetectable from the full human.

Even if it might be a stretch to compare the students to slaves, they do nevertheless occupy a social position within the novel that at least suggests they are part of a service economy. Gabriele Griffin suggests that the question of difference emerges in the novel because the clones exist to serve each other (as companions and as carers) and to serve those who will receive their organs. They are separate from “ordinary human beings, people who are not part of the particular command-and-control structure which the clones inhabit” (652). Through their service within this culture, controlled by shadowy figures referred to in the novel by the clones and even by Madame only as ‘they,’ the social configurations of sameness and difference are highlighted so that the clones’ socially-marked difference is constructed as a difference in kind by the society they inhabit, while for the reader, the difference seems to be only a difference in degree. Madame and the other instructors at Hailsham created the school and taught the students there to prove that they had souls, to prove that the difference between the clones and the ‘ordinary’ folk of this storyworld was a matter of degree, not of kind.

If the functional nature of clones was not clear enough in Griffin’s argument by reference to their service, the suggestion that they are part of an institutional structure of “command-and-control” further emphasizes their position by invoking the language of the cyborg. Norbert Wiener, coiner of the word “cybernetics” connects communication with control, and by extension the imperative of the command, because society can only be understood through communication including “messages between man and machines” which “are destined to play an

increasing part” in future development of that society (16). Information conveyed during communication is used to “adjust” to the outerworld, which in turn changes that world so that “to live effectively [in the modern world] is to live with adequate information” (18).³⁹ In the context of the biopolitics of Ishiguro’s invented world, information about the clones’ status as beings with or without souls will dictate how effectively they are able to live and survive in that society.

The reader who has been listening to Kathy narrate her life has no doubt that the difference is in kind only. If the reader feels any fear in reading this text, it is the fear that individuals like Madame and the mysterious ‘they’ who control the clones’ fate might divide our world into those who are human and those who are not and that we might find ourselves on the side of those who serve, not those who are served.

In the biotechno-logic of the novel, the efforts of Madame and the others to prove that the clones have souls carries little weight since the clones are part of a social institution that constructs their bodies as property they do not own. In this, the clones exist in a kind of bioslavery in which they control their bodies, but ultimately do not own them. The concept of bioslavery has also emerged recently outside of literature in court cases, as in the case of John Moore, a patient of the UCLA Medical Center, whose diseased spleen was used by a researcher at the center for develop a profitable cell line used for research (Wald 208). Moore sued the Center for a share of the profits made from use of his tissues; in the end, Moore was unsuccessful because the courts determined that to award him control over his body parts as “property” would

³⁹ This idea that information will control the development of cybernetics in a posthuman future emerges early in the rhetoric of the cyborg. For example, in Manfred Clynes and Nathan Kline’s 1960 “Cyborgs and Space” they suggest that “it is becoming apparent that we will in the not too distant future have sufficient knowledge to design instrumental control-systems which will make it possible for our bodies to do things which are no less difficult” than being able to live in the vacuum of space. They suggest that with enough knowledge, such systems could transcend the limitations of the human body. The growing of spare organs is one such logical extension, as is the creation of a new kind of human in the Forged humans of Justina Robson’s *Natural History*, which will be discussed in the last chapter.

commodify the body, allowing the sale of body parts for profit (210). However, what was as equally important as the materiality of his body parts was that the *information* within them was profitable to researchers. As Wald suggests, “bioslavery represents not an intrinsic logic, but the creation of a logic” (212) and that the information contained in the body only is given meaning within a similar cultural logic because “genomic information is not transformative until it comes into a social and rhetorical context” (220). The use of the clones’ bodies as nothing more than material vessels for their organs ignores the potential information that those bodies might also contain, including information about the essence or soul of the human that Madame and others hoped to reveal in the clones’ artwork.

The information contained in the bodies of the clones in their DNA is both particular: it belongs to the clone and his or her possible, and universal: human DNA is different from the DNA patterns of other animals. In attempting to prove that the clones are human, Madame’s group hoped to evoke sympathy for the clones by inviting others to identify with them through their art. The sentimentality that the reader is invited to share through the first-person narration in the novel elicits a similar identification and sympathy in the reader for the plight of the clones.

Kathy’s appropriation of language that addresses both the marginalized clone and the non-clone to “bear the burden of [her] own cultural experience” focuses our attention on the ways in which the clones are like us even as the particular details of their lives differ (Ashcroft et.al 38). The praise that Miss Emily expresses at the end of the novel: “You’ve turned out well. I’m sure you have much you could tell me to make me proud” also emphasizes the particularity of each clone’s life, how they might have turned out differently. We can think of this mix of familiar narration and particular experience in terms of Hannah Arendt’s universalism, which she defines “as plurality, the difference from one another that all human beings have in common, and

as natality, the human capacity for beginning” (Marcus 91). Sharon Marcus suggests that this kind of universality allows us to rethink pathos by pointing to how it operates in the case of the *Diary of Anne Frank*, which feels simultaneously “universal, and international” while presenting a particularly Jewish experience of the Holocaust (102).⁴⁰ Marcus suggests that in the case of Anne Frank, her diary elicits pathos: “a response that registers the excess of fate that readers know about but do not and cannot share” since the reader knows that Anne did not survive the camps (104). Similarly, the reader of Kathy’s story knows that she will not survive her donations, just as Kathy knows. Kathy’s hope for a deferral and the naïveté she expresses about how others view the clones in her question: “Did someone think we didn’t have souls?” contrast sharply with the reader’s awareness of not only her impending death but of the inhumanity of her life and death (260). In listening to Kathy’s story, the reader is invited to consider how posthuman figures like clones might represent this kind of universalism that draws our attention to their particular difference by emphasizing the ordinary universalism of Kathy’s relationships with her friends Ruth and Tommy.

Ishiguro constructs this cosmopolitan condition of the universal as one that hinges on whether the clones have souls or not, which is why Madame and Miss Emily try to demonstrate they do through their production of art. The clones’ bodies are posthuman because they are constructed as a sort of information reservoir: in this case, the information they may contain will define whether they are posthuman in degree and thus part of the human family, or whether they are posthuman in kind, and thus potentially not part of the human family. Ultimately the reader is left with a sense that the difference is in degree rather than in kind, so that the dystopic vision of

⁴⁰ The connection between the Kathy H. and Anne Frank, or the clones and the Holocaust is reinforced by Margaret Atwood’s review of the novel when she explicitly links the clones’ artistic production to the “art-making children in Theresienstadt and of the Japanese children dying of radiation who nevertheless made paper cranes” (“Brave New World”).

the novel serves as a warning that biotechnologies might replicate some of the worst errors of past human injustices.

CHAPTER 3 The Prosthetic Posthuman Body

Modernity, then, brings both a fragmentation and augmentation of the body in relation to technology; it offers the body as lack, at the same time as it offers technological compensation. Increasingly, that compensation is offered as a part of capitalism's fantasy of the complete body.

Tim Armstrong *Modernism, Technology and the Body*

If the prosthesis is commonly an artifact that supplements a failing organ, or the instrumental extension of a body, then the DNA molecule, which contains all information relative to a body, is the prosthesis par excellence, the one that will allow for the *indefinite extension of this body by the body itself* - this body itself being nothing but the indefinite series of its prostheses.

Jean Baudrillard *Simulacra and Simulation*

Posthuman figures appear in all sorts of places. They emerge in literature, where they represent our vexed social, racial and cultural relations and challenge our notions of human identity, autonomy, and cultural belonging, but they also appear in other texts. What modernity offered us was a shifting relation between humans, machines and nature, while postmodernity has challenged the possibility of maintaining such category definitions in this first place. The question of what constitutes human agency and identity in the face of the challenges of genomics, increasingly sophisticated communications technologies, medical treatments, and more and more effective means of engaging in warfare produces multiple and often conflicting

answers, both within literature and within our culture in general to the question of what it means to be human.

This chapter will explore how literature, scientific discourse, and the modern technological developments that they represent, interact to produce discourses that explicitly question the relation of the posthuman to modernity (or postmodernity). The chapter will focus on Ian McEwan's *Saturday* (2005) as an example of a literary text whose use of ideas about the posthuman, including the prosthetic, alongside its exploration of class-based access to technologies of the posthuman, suggest that there is something inherently human about the posthuman. In placing the literature in contact with the science and criticism of the posthuman within science studies, I hope to highlight the ways in which the posthuman is in continuity with the human within the particular ways that literary discourse represents this issue.

At first glance, McEwan's novel may appear to have little to do with posthuman figures like cyborgs and clones, because those figures are not overtly represented. What the novel does however is engage with the posthuman in a story that uses technology as a backdrop against which the characters attempt to negotiate their own relationships with other humans and with the technologies that shape their bodies and their lives. Baudrillard's idea of the prosthesis as an "instrumental extension of a body" that becomes indefinite when it seems to provide all the information about that body, will be used as a way of measuring the response of the characters in the novel to their own and others' bodies. Their struggles with technology, both as a material practice and as a metaphorical or cognitive approach to problem solving and social relationships, reflect struggles articulated in non-literary sources as well, so that the chapter will also point to those non-literary social and scientific concerns about such technologies at appropriate moments.

Saturday narrates the fictional events of Saturday, February 13, 2003, as experienced by Henry Perowne, a neurosurgeon and father of both a jazz musician and a poet. Henry awakens in the middle of the night to see a plane on fire gliding through the air, and this event, although mundane once the details are revealed, is sufficiently alarming to him to color his whole day. A minor fender bender with the street-smart Baxter, who is showing the early stages of Huntington's disease, dictates the remaining action of the day, including Baxter's attempt at revenge for Henry's humiliating identification of his disease through a home invasion that fails, ultimately putting him under the neurosurgeon's knife in an attempt to repair his injuries.

In McEwan's novel, engagement with genetic knowledge and medical technology is not the central point of the plot; rather, it functions as a technique which the author can employ to explore questions of class, what the implications of good (and bad) genetics might be, and the way in which the deployment of genetic technologies (or genetic information) implies an objective evaluation of the subject while remaining blind to the subjective manner in which such technologies may be employed. Set in London, a cosmopolitan city and centre of a once vast world empire, the novel narrates the tension between a kind of global cosmopolitanism that suggests that anything is possible on that February day, and a kind of genetic determinism that writes our fates within our genes. Although there are no cyborgs or clones in the novel, the neuroscience that Henry Perowne practices, and his own attitude towards his family and the unfortunate criminal Baxter - whose chance encounter with Perowne triggers the conflict of the novel - reveal the ways our science and technology inform our relationships with the humans around us. In McEwan's novel, as in the scientific and social literature discussed, we see how genetics becomes a narrative that informs social relations in ways that expand our knowledge of

the human body at the same time as offering a means to limit our perception of its potential through such knowledge.

Modernity, Progress and Biotechnology

The cloning of Dolly the Sheep in 1997 by researchers in Scotland changed the public perception of biotechnology. After that event, “moral and sociopolitical considerations such as the consequences of tampering with nature, and where the new science was taking society, appeared to weigh more heavily in the public mind than issues of scientific risk and safety” (Gaskell 292). Further, in Britain specifically, this change in attitudes toward biotechnology suggests that genetics has attained a “glamour status” in the media so that genetics “now has an intrinsic value” (298). The media coverage of the Dolly story itself differed from country to country, with coverage in Britain emphasizing the accomplishment as the latest in a string of specifically British discoveries.⁴¹ The different attitude toward biotechnology in different countries means that representations of genetics in a text like McEwan’s novel have the potential to color the narrative in ways that distinctly reflect the history of the British nation.

One of the hallmarks of the modern age has been increased production and the influence of capitalism in a narrative of social progress. In the nineteenth century, the Victorian urge to produce “whether it is children or industrial goods” (I. Armstrong 1) mirrored technological

⁴¹ Einsiedel et al. note that British coverage of the Dolly event in the first two weeks differed from other countries in its emphasis on previous British scientific accomplishments (“Brave New Sheep” 339). A similar effect can be seen in the foreword of the report “Our Inheritance, Our Future: Realising the Potential of Genetics in the NHS” where Prime Minister Tony Blair begins by writing “our country has a remarkable scientific tradition. The extraordinary achievements of Newton, Darwin, and a host of other eminent scientists have both greatly increased the understanding of our world and improved the quality of life for everyone. Our record continues to be outstanding; with just one per cent of the world’s population, we receive nine per cent of scientific citations” (1). These two texts suggest there is a distinct national pride in the scientific achievements of the British people, specifically in the realm of biological science and biotechnology that reverberates in media and political representations of the importance of these technologies to the nation.

advances in agriculture, transportation, and communication, such that critics like Thomas Carlyle could write with certainty that “it seems a well-ascertained fact, that in all times... that happiness and greatness of mankind at large have been continually progressive. Doubtless this age also is advancing. Its very unrest, its ceaseless activity, its discontent contains matter of promise” (293). With the turn of the century, the idea of the modern age as one of unparalleled change became more firmly entrenched. Modernity itself became in some ways synonymous with progress in the early part of the twentieth century, and it was only with the disastrous effects of the technologically-mediated world wars and the atrocities that accompanied them that the notion that progress was desirable began to lose its luster.⁴²

But belief that technological development would continue to improve our lives never really faded. Technology’s proponents may have grown more cautious in their pronouncements, but at this turn of this century, there is no shortage of technophiles willing to describe how technology will improve our lives in the next century.⁴³ The belief that technology has the capacity for improving the human lot emerges in subtle ways in McEwan’s novel. McEwan creates Henry Perowne as a rationalist and scientist, who views theories of the constructed nature of social interaction and development with suspicion in order to suggest that Perowne’s attitude toward progress is misplaced. In *Saturday*, Henry Perowne, someone who sees himself as an old-fashioned man, defends the progress society has made over the twentieth century to improve individual lives:

⁴² Ian McEwan identifies the notion of progress with a kind of utopianism that failed in the twentieth century so that in “the idea of building a better society, words like progress have fallen out of our vocabulary” to be replaced by a “degree of cultural pessimism” that novelists reflect (“Ian McEwan, *Finishing New Novel, Ponders World After Sept.11*”).

⁴³ For example, proponents of nanotechnologies sound profoundly enthusiastic about the unlimited potential of nanomanufacturing to solve environmental, social, and technological problems in the twenty-first century. For specific examples and a discussion of the theoretical nature of such pronouncements, see Colin Milburn’s *Nanovision*.

At every level, material, medical, intellectual, sensual, for most people it has improved.

The teachers who educated Daisy at university thought the idea of progress old-fashioned and ridiculous. In indignation, Perowne grips the wheel tighter.... It wouldn't be cool or professional to count the eradication of smallpox as part of the modern condition. Or the recent spread of democracies.... [People have] extended lifespans, wondrous machines.

This is an age of wondrous machines. (77)

Perowne's defense of "progress" is based on his observation of ways that technology has improved the lives of those around him, including improving the accuracy and success rate of the neurosurgical procedures he performs. But an underlying preoccupation of Perowne's *Saturday* is the build up to war, a war that he ambivalently supports. The same kinds of technological advances that have eradicated smallpox also make the waging of war more effective, at least from a military perspective. This dual nature of technology becomes the backdrop against which Perowne considers his own position in society. Perowne's notion of progress implicitly is positive. For Perowne the surgeon, this belief makes a whole lot of sense given the incredible medical advances of the last century. But as the reader becomes aware through McEwan's narration of Perowne's thoughts, it also makes Perowne blind to the pernicious effects of such advances, such as the ways in which genetic information might be used in discriminatory ways or the way that class might influence one's relationship to progress.

R.L. Rutsky suggests that the instrumentality of technology has implications beyond simply the deployment of that technology itself (1-2). Rutsky argues that technology, or at least high technē (his term for the way in which technology becomes transformed to an all inclusive technoculture), functions to distinguish social classes. Rutsky suggests that high technē is a kind of avant-garde movement whose "overblown rhetoric" is reminiscent of the manifestos of the

avant-garde in the early decades of the twentieth century (5). Pointing to Heidegger's notion that modernity represents an increasing effort by technology to secure the artistic aspects of technē, he writes: "just as technological reproducibility breaks down the 'enchantment' or 'aura' of the aesthetic realm, allowing art to become functional, [Heideggerian] unsecuring allows a mythic or 'enchanted' view of the world to be broken down and thus transforms the world into objects that are available for human use and control" (7).

Rutsky reads this liberation of art from older elitist philosophies as being expressed in postmodern pastiche and the rise of technoculture in the late twentieth century (15). But at the same time, high tech "comes to be seen as something that is too large, too complex, too uncontrollable, to be considered a means or tool to some rational, predictable end," which means that high tech is shifting the definition of the human; after all, modernity has "tended to define the human subject in terms of its presumed mastery of technology and the world" (Rutsky 103). When this mastery is lost to the uncontrollable largeness of the high tech, the gap between humans and their technology becomes larger and larger. While Rutsky offers no solution to this dilemma, Alison Muri suggests that the cyborg consciousness that arises from our high tech era "should also be characterized by acknowledging these continuities with past expressions of our quest to understand our communications, our bodies, and our humanity" (Muri 8). Certainly Jean Francois Lyotard's suggestion in his discussion of memory and modernity that "the postmodern is always implied in the modern" (25) would support a similar sense of continuity with our technological past. Similarly, Neil Badmington, reminds us as well that continuity with the past, cannot be shaken just because we declare ourselves to be "post" anything, so that "humanism's ghost" reappears in posthumanism because it "is as much *posthumanist* as it is *posthumanist*" (15). Henry Perowne's insistence on the importance of progress, and thus the importance of the

past, also reminds us in *Saturday* that the posthuman is not a complete break with the human. Henry retains some of the negative, elitist assumptions of humanism that posthumanism has sought to shed in the twenty-first century and as we will see, Henry Perowne draws upon these ideas (selectively, and unconsciously), to organize his technologically-mediated world of twenty-first century London.

One of the ways in which the modern continues its influence in the twenty-first century is through the physical human body and its ability to act in multiple ways as a metaphor. Physically, the body comes under regulation in the modern period, due in part to discoveries in the field of biology, but also because “the period from 1880 to 1930 saw a significant shift in the way in which the economic was conceptualized, from an analysis governed by scarcity, in which problems of production dominate, to one governed by abundance, in which consumption replaced production as the main focus” (T. Armstrong 53). This shift meant that the human body’s consumption patterns were subject to the march of progress, for example, through Fletcherism’s mastication programs or Kellogg’s search for the perfect breakfast food (43).⁴⁴ Similarly, in *Purity and Danger*, Mary Douglas suggests that our modern preoccupation with hygiene and dirt as conditions conducive to contamination by pathogenic organisms is simply a surface explanation for our desire to impose order. Dirt is “matter out of place”: “This implies two conditions: a set of ordered relations and contravention of that order. Dirt, then, is never a

⁴⁴ Fletcherism – an eating fad in the first decades of the twentieth century in which food is chewed to the point of liquid in order to get the most out of it – was “linked to other reform movements: eugenics, the body-building of Macfadden and Sandow, Boy Scouts, mass-exercise movements, calorie-counting” (51). All of these movements were methods for controlling the body, and Fletcherism in particular was concerned with controlling the body through the reduction or elimination of waste. Tim Armstrong states: “the conceptualization of ‘waste’ pervades economic and social thinking in the twentieth century” so that waste comes to be seen more and more through the century as a “general problem, a term for the frustration of social ‘efficiency’ in a variety of contexts: economics, eugenics, production, materials, food, land, failures of standardization, even light... In many of these [modernist] texts, waste is not simply the failure of social hygiene; it is bound up with modern modes of production” (T. Armstrong 58). The body as a metaphor for the human and social hygiene means that waste becomes a marker of consumption and a failure of social movements to improve the human race.

unique, isolated event. Where there is dirt there is system. Dirt is the by-product of a systematic ordering and classification of matter, in so far as ordering involves rejecting inappropriate elements” (48). The objects and ideas that might contradict our ordered classifications include bodies, which must either be accommodated into a classification schema or rejected as disorder and thus not a part of culture. Henry Perowne’s intensive sterilization procedures as a surgeon entering the operating theater or his admiration for how his mother “gave her life to housework” (McEwan 158) are all expressions of this kind of desire to impose order. In the context of modern biotechnologies, when bodies do not fit “natural” classification schemes, they challenge our notions of progress and control over the body that modernity promises.

Genetic Determinism in *Saturday*

In *Saturday*, Henry Perowne’s medical training influences how he interacts with others during his day. Although he is only in the surgical suite at the very end of his day, he thinks in medical terms about his mother’s dementia, drives what his son has labeled a “doctor’s car,” and judges Baxter as well as others he meets through the lens of their genetic heritage. As a neurosurgeon, Henry is faced with the challenge of mending gaps between the body and mind. By repairing ailing brains, he is able to restore function that we normally think of as the mind. But his work also implicitly rests upon the assumption that the bodies and minds he reunites through his surgical intervention belong together, that the repairs he undertakes restore a sense of human dignity to the individual for whom it has been lost. When contemplating one of his surgical patients, Andrea, for example, he considers whether her (anti) social demeanor is a product of her neurological problem (in which case his intervention will restore it to normalcy), or a

reflection of an integrated self that his surgery will not displace. When Andrea emerges from surgery, her demeanor is changed, though he is suspicious of an explanation that it was due to the surgery because the part of the brain he operated on has “no bearing on emotional function” (McEwan 267). However, it is the monstrous Baxter, whose brain Henry cannot fix, whose fate is written by the organic chemistry of the “error of repetition in the codes of his being, in his genotype, the modern variant of a soul,” that troubles Henry after his long day (289). Having Perowne imagine in all seriousness that Baxter’s genotype is the constituent component of his soul allows McEwan to reinforce how narrow Perowne’s black and white view of the world is, as one in which progress is tied to knowledge, including the knowledge of someone’s genetics.

Baxter, who Perowne encounters during a fender-bender, suffers from Huntington’s disease. In a desperate attempt to avoid extortion or a beating that Baxter and his pals are threatening Perowne with after the accident, the doctor guesses at his condition, telling Baxter he can help him: “‘Your father had it. Now you’ve got it too.’ He has the impression of himself as a witch doctor delivering a curse.... ‘I’m a doctor. Has someone explained to you what’s going to happen? Do you want me to tell you what I think your problem might be?’ It works, the shameless blackmail works” (95). Distracting the bully with the implied promise of hope, he is able to escape, though he is uncomfortable with the way in which he made his escape.

As he distracts Baxter, Henry contemplates the genetic defect, thinking “here’s biological determinism in its purest form” (94). In labeling Baxter’s condition as a fate written on his genes, Henry imagines that Baxter is a flawed human who cannot be fixed by the neurosurgery that Henry performs because it does not know enough about those genetic codes to fix them (262). The list of symptoms that Baxter will express is devastatingly regressive, a disease that slowly

robs its victims of the characteristics we commonly think of as being demonstrative of our humanity:

Between ten and twenty years to complete the course, from the first small alterations of character, tremors in the hands and face, emotional disturbance, including – most notably – sudden, uncontrollable alterations of mood, to the helpless jerky dance-like movements, intellectual dilapidation, memory failure, agnosia, apraxia, dementia, total loss of muscular control, rigidity sometimes, nightmarish hallucinations and a meaningless end. This is how the brilliant machinery of being is undone by the tiniest of faulty cogs, the insidious whisper of ruin, a single bad idea lodged in every cell, on every chromosome four. (94)

The list of symptoms leading to a “meaningless end” suggests that Perowne holds little hope for a cure. In addition, Perowne’s description of Baxter’s body as a “brilliant machine” with a “faulty cog” assigns a mechanistic explanation to his condition. Perowne thinks “there are so many ways a brain can let you down. Like an expensive car, it’s intricate, but mass-produced nevertheless, with more than six billion in circulation” (99). Unlike an expensive car, Perowne knows what’s wrong; he just can’t fix it. But Baxter’s condition is also a kind of atavism; the emotional lability characteristic of his condition is child-like or primitive, unlike Henry’s own more sophisticated struggles with his emotions. This regression is reflected in Perowne’s belief in the power of knowledge, technology, and progress, but at the same time, it is also inseparable from it.

At the same time that Henry’s attitude toward Baxter expresses a kind of genetic determinism – in which his fate is written in the error of coding within his genes that will lead to progressive deterioration – Henry links Baxter’s physical decline due to Huntington’s to his

social decline into crime. Considering the impulsiveness and mood swings that characterize the disease, after Baxter breaks into his home, Henry thinks the disease “will be driving Baxter on now” because “*It is written*. No amount of love, drugs, Bible classes or prison sentencing can cure Baxter or shift him from his course. It’s spelled out in fragile proteins, but it could be carved in stone, or tempered steel” (217). What is interesting in Henry’s list of potential solutions to the biological deterioration Baxter is experiencing is that except for drugs, all the items are social interventions rather than medical treatments. McEwan tells us that “for all the reductive arguments, Perowne can’t convince himself that molecules and faulty genes alone are terrorising his family,” which sums up his entire view of Baxter (218). Baxter’s genetics might contribute to his emotional lability, but he is first and foremost “a man who believes he has no future and is therefore free of consequences” (217). In their first encounter, Henry thinks of Baxter as “an intelligent man, [who] gives the impression that, illness apart, he’s missed his chances, made some big mistakes and ended up in the wrong company” (99). Although Baxter’s genetics did not directly contribute to his criminality, they ensure that he has few prospects beyond it now, but Henry “knows himself to be incapable of pity” for this fate, and thus distances himself from this man whose social position and genetic inheritance mean that, in Henry’s mind at least, he is hopeless case.

Henry’s attitude toward Baxter reflects the age-old nature versus nurture debate in the development of human characteristics. Baxter’s disease is a genetic error, suggesting that nature has written his fate for him, but his criminal actions suggest that nurture may have put him where he is. Henry thinks that the two might be linked in Baxter’s case, suggesting that he really believes that nature and nurture interact in the development of a personality, but at the same time, Henry accepts that his children are gifted without questioning whether they owe that to

their genetics or to their environment. Although he is willing to reduce Baxter's criminal behavior and social status to the error in his genes that produces the symptoms of Huntington's disease as well as his upbringing, he does not turn such a clinical eye on his own children's relative successes and failures.

When Baxter breaks into the family home, holding Henry, his wife Rosalind, daughter Daisy and son Theo hostage in search of retribution for the humiliation of having let Henry get away in the street, his gifted family help save them. Daisy's first book of poetry is about to come out, and at one point Baxter amuses himself by forcing Daisy to strip and read from the book. She recites Matthew Arnold's "Dover Beach" instead of reading, though neither Henry nor Baxter realize it is not her poem. This distraction allows Henry to convince Baxter to leave the rest of the family for the library which allows Theo to follow, tackle Baxter and throw him down the stairs, ending the home invasion. In contemplating the transformation that Baxter undergoes upon hearing Arnold's "Dover Beach" Henry thinks, "Baxter fell for the magic, he was transfixed by it, and he was reminded how much he wanted to live... But Baxter had heard what Henry never has, and probably never will, despite all Daisy's attempts to educate him" (288). Henry's defect is an inability to respond to the poetry in the same way that Baxter does, and although he does not articulate it that way, the reader has to wonder if Henry would think this a genetic defect of his. Despite his skills and wealth and wonderful family, Henry cannot respond to poetry in a way that even Baxter, the man who is missing so much, can.

Daisy's recitation of "Dover Beach" transforms Baxter's hostile intent into elation, but in her forced nudity, her recitation also reveals to her parents something she has yet to share, the fact that Daisy is pregnant. There will be a new member of the Perowne family soon, so that Daisy's production of poetry is matched by her reproduction of the family line. While it's clear

that Baxter is immediately caught up in the beauty of the words, on Daisy's first reading of the poem, Henry imagines the poet looking out from a terrace, telling her lover that they must "be true / to one another!" (Arnold 29-30) because they are having a child and there is no "certitude, nor peace" (34) in this time "when desert armies stand ready to fight" (McEwan 229). On second reading, Henry realizes that he has imposed his own anxieties onto the poem and that there is no mention of a lover or an impending war in the desert. He has heard those things in the poem, and one might surmise that this imposed reading is part and parcel with Henry's belief that poetry has no business explaining life. Henry finds it hard to believe that poetry can trigger the "powerful feelings [that] have obliterated the memory" of Baxter's original purpose (232) and that "a mere poem of Daisy's could precipitate a mood swing" (229), but it does, even though he cannot understand Baxter's elation himself. To him, "the poem's melodiousness... is at odds with its pessimism," a mismatch of sentiments that he cannot reconcile (230).

Henry Perowne, a scientist at heart, believes "a man who attempts to ease the miseries of failing minds by repairing brains is bound to respect the material world, its limits, and what it can sustain" (66). Although he adores his children and is proud of Daisy's accomplishment, her art is not material in the way that his work (or one's genes) are. This is why he attributes his children's abilities – the son who is an accomplished musician, and the daughter whose first book of poetry is being published – to forces beyond his control, to the luck of the genetic draw:

It's a commonplace of parenting and modern genetics that parents have little or no influence on the characters of their children. You never know who you are going to get. Opportunities, health, prospects, accent, table manners - these might lie within your power to shape. But what really determines the sort of person who's going to live with you is which sperm finds which egg, how the cards in two packs are chosen, then how

they are shuffled, halved, and spliced at the moment of recombination. Cheerful or neurotic, kind or greedy, curious or dull, expansive or shy and anywhere in between; it can be quite an affront to parental self-regard, just how much of the work has already been done. On the other hand, it can let you off the hook. The point is made for you as soon as you have more than one child; two entirely different people emerge from their roughly similar chances in life. (25)

Henry's attitude toward his children and Baxter can be seen in his declaration that "what really determines" the sort of child you will have is a random combination of genes. This attitude suggests that the individual cannot transcend his or her birth and can at most, only mitigate those original, genetic circumstances. It is an attitude that also gives rise to paternalistic expressions of class and race as determiners that keep some individuals from succeeding.⁴⁵ What Henry overlooks is the power that "opportunities, health, prospects" have on a child's life and that these things are directly a result of one's social status, which may be just as unfairly distributed in a population as the error in the DNA of someone with Huntington's disease.

The genetic determinism to which Henry attributes Baxter's criminality is also representative of the kind of attitude that many people have regarding disabilities like Baxter's. The historical connection between disability and negative eugenics is well documented, and in public debates about disability and genetic technology, "lay people are often troubled by the dehumanizing tendencies in medicine such as the often impersonal nature of medical treatment, the fragmentation of bodies in clinical practice, and the loss of a larger sense of the character and purpose of human health" (Barns 284). When surgeons like Henry lose their sense of empathy

⁴⁵ See for example James Watson's comments about black people and intelligence mentioned earlier (Nugent "Black people 'less intelligent' scientist claims") or Joseph Graves's *The Emperor's New Clothes: Biological Theories of Race at the New Millenium*.

for the people they treat, it reduces those who are not ‘model’ figures – like Baxter – to the sum of their symptoms.

Henry’s perception of bodies is aesthetic and in some ways removed from the reality of their existence. In the surgical theatre, the bodies he operates on are shorn of human identity or individuality, because “once a patient is draped up [the point at which Perowne enters the surgery], the sense of a personality, an individual in the theatre, disappears” (255). Several critics, who have noted this dislocation from his patients that Henry feels in his interactions with others, have offered theories regarding its source and effects. For example, in her discussion of the novel, Elaine Hadley suggests that

by demonstrating his powers of detachment, his admirable ability to distance himself from his own multiple interests (his car, his daughter, his wife, his career) and the damage Baxter has incurred or threatened to incur and to attain a disinterested view — ‘to see the object as in itself it really is’ (Arnold, “Function” 1) and, relatedly, in the midst of injury and disease, to see ‘sweetness and light’ (Arnold, *Culture* ch. 1) in the operations of the human consciousness—Perowne is both true to himself and to Baxter. (93)

However, Perowne’s fidelity to himself and to Baxter only extends to the present threat of Baxter’s unstable mental and physical state. Hadley suggests that his willingness to operate on Baxter matches the “mournful human accomplishment” (ibid.) of the poem and that Henry’s misrecognition of the poem as his daughter’s, not Arnold’s, during its reading makes him an equal dupe to Baxter, whose admiration for the poem causes him to abandon his criminal intentions. But Henry’s ability to “seek out a private space of thoughtful emotion, of human intimacy where subjects alienated in mind or body can become fully authentic and intentional in relation to themselves and to each other” is insular; human intimacy is forced upon Henry by proximity. He

dismisses the encounter with Baxter as something he just doesn't "have the time" for, despite his son's warning that he should watch out for retribution (McEwan 154). His dismissal blinds him to Baxter's presence on the park bench outside the house, and it is only when Baxter forces his way into the house that Henry turns his attention to the man.

Elizabeth Kowaleski Wallace reads Henry's detachment as an alienating force that distances him from Baxter's anguish. She suggests that

Because McEwan takes no obvious critical distance from his protagonist's limitations, his narrative normalizes the idea that it is understandable for people like Henry not to connect with those beyond his immediate family. The reader receives the impression that the effort needed to project into the situation of others is beyond the ordinary. Deep connection to humanity remains the gift of a talented few, in contrast to [Paul] Gilroy's important reminder that a humanistic tradition has always emphasized our shared points of experience over our disparate feelings. (470-71)

Similarly, Henry Perowne is unable to understand or see a purpose in the literature his daughter gets him to read; he wants the world to be explained instead of being described (McEwan 65).

Henry's disconnection from the people around him and the literature which informs his cultural moment matches his admiration for the cosmopolitan nature of London and the dramas that take place in the square on which his home sits which he has no real connection to. The drama of the square unfolds before him, but he plays no role in it. According to Wallace, *Saturday* is a novel that "continually glances at a multicultural and cosmopolitan society with which it resists engagement," just as Henry within the novel resists engaging with the world around him (467).

Furthermore, Henry suffers from what Paul Gilroy calls "postcolonial melancholia," the inability to face the loss of empire and national identity that goes with it. In Henry, the condition

“alienates him from and keeps him indifferent to all those Londoners around him whose biographies might force him to confront the story of England’s imperial legacy” (471). I might also suggest that Henry’s indifference to other Londoners allows him to avoid confronting his own position as a beneficiary of the class system that provides him with a wealth of resources that make living in a cosmopolitan city that much more comfortable.

Henry’s detachment also stems from his knowledge and skill as a neurosurgeon and the techniques and technologies that make his profession possible (McEwan 99). Just as the bouncers at the front door of the hospital barricade the desperate from gaining access to the building when deemed not medically necessary, Henry’s clinical detachment in the surgery keeps those in need at arm’s length, just as it does in other facets of his life. In this novel, science, the knowledge of genetics, and the medical technologies Perowne employs alienate him from his fellow human beings.

The Cosmopolitan City, Bodies, and Technologies

In “Love and Then Oblivion,” published in the *Guardian* on September 15, 2001, just four days after the attack on the World Trade Center and Pentagon in the United States, Ian McEwan writes: “Imagining what it is like to be someone other than yourself is at the core of our humanity. It is the essence of compassion, and it is the beginning of morality.” *Saturday*, which begins with Henry Perowne at the window, watching another airplane on fire in the early hours of February 15, 2003, would seem to be McEwan’s response to the event, as well as an answer to the question he poses earlier in the same article: “[the last words of those in the towers and on the planes] compel us to imagine ourselves into that moment. What would we say? Now we

know.” For McEwan, the words that connect and humanize us, “I love you,” are what we imagine we too would say. The lack of empathy and the “dehumanising hatred” of the hijackers is their failure. But Henry Perowne, the fictional observer of subsequent events, also fails to empathize with those who he encounters who are not like him. McEwan vividly portrays this apathy through Henry’s failure to empathize with the war protesters, but more importantly, in his reductive essentialization of Baxter’s illness, he expresses a genetic determinism that is blind to the individual experience of those whose genetics he does not share.

Henry’s failure to empathize is in part of failure of imagination. Considering Benedict Anderson’s suggestion in *Imagined Communities* that nations are so large that it requires an act of imagination to comprehend the nation in its entirety (6-7) provides a point from which to begin understanding Henry’s failure. But imagining a community also introduces the possibility that what is imagined does not accurately reflect what actually constitutes that community. For example, Kevin Robins suggests that “British national identity has always been more diverse than it is normally imagined to be” in recognition that Britain is not a unified community, but one consisting of multiple overlapping boundaries with diverse concerns, which produces a kind of “cosmopolitan” view of Britain (483).

As a large city, London is also susceptible to imaginative mis-understanding; the city is often envisioned as a multi-ethnic space that plays a significant role in world politics and finance. London, as former imperial centre and destination for people from former colonies, is, in Paul Gilroy’s words, that which “supplies the answer to the puzzle of what English culture is going to be” (“A London” 68). As a trade and financial centre, it brings together individuals from different backgrounds, the rootless cosmopolitans whose identity Salman Rushdie suggests is “at

once plural and partial,” “straddle[ing] two cultures” (“Imaginary Homelands” 15).⁴⁶ This cosmopolitan identity offers the possibility of transcending the determinism of a particular national character; however, this act also relies in part on the imagination of its inhabitants, including ones like Henry Perowne.

The novel attends to the features of the city as it traces Henry Perowne’s day as he moves through London, from that awakening in the early morning, through his attention to news broadcasts throughout the day as he plays squash, buys fish, visits his mother, cooks dinner, and then expects to spend a pleasant evening at home. On the way to his squash game, he must detour around a group protesting the impending war against Iraq, a reminder of the central role that London plays in the politics of Britain; this leads him into a fender bender with Baxter and two cronies. Henry escapes Baxter’s threatened beating by foretelling Baxter’s future degeneration into disease in a scene more reminiscent of a visit to the witch doctor than a medical consultation. Much of the action takes place in the family home, on a square near Regent’s Park when as his family assembles for dinner, Baxter and his companions break into the house, intent on exacting revenge for the earlier escape. The square itself plays a role in the drama, allowing Baxter to track Henry back to his home, but as we will see, it also as a venue onto which Henry can imaginatively project his own thoughts about war, family, conflict, and even architecture.

In *Cosmopolitanism*, Anthony Kwame Appiah suggests that a cosmopolitan outlook requires a loyalty to all humanity because “the one thought that cosmopolitans share is that no

⁴⁶ This rootless cosmopolitanism can become a means for defining individuals by their immigrant histories. Graham Huggan suggests that Rushdie (and V. S. Naipaul) are generally presented as postcolonial or ‘cosmopolitan’ writers, not as British writers as if “to suggest that in some deep-rooted, almost atavistic sense, they are immigrant writers who ‘really belong’ somewhere else” (85). This suggestion that the rootless cosmopolitan is not tied to a particular place represents a different kind of cosmopolitanism than Sharon Marcus’s universal cosmopolitanism discussed in the last chapter.

local loyalty can ever justify forgetting that each human being has responsibilities to every other” (xvi). But for others, simply imagining London as a cosmopolitan city, also allows one to acknowledge difference while only attending to the parts of the city that most comfortably fit into one’s imagined community. Henry Perowne’s vision of London fades out at the edges, so that it is only his little corner of that city that comes into clear view:

Henry thinks the city is a success, a brilliant invention, a biological masterpiece - millions teeming around the accumulated and layered achievements of the centuries, as though around a coral reef, sleeping, working, entertaining themselves, harmonious for the most part, nearly everyone wanting it to work. And the Perownes’ own corner, a triumph of congruent proportion; the perfect square laid out by Robert Adam enclosing a perfect circle of garden - an eighteenth-century dream bathed and embraced by modernity.

(McEwan 3)

The square in front of Henry’s home – a luxurious leftover from the previous centuries – is the space Henry uses to imagine the cosmopolitanism of his city.⁴⁷ McEwan presents Henry’s view with irony, since his observations betray a lack of understanding of the motivations behind the events he witnesses. His descriptions of the activities in the square all are taken from a remove, a kind of upper floor view, remote and distant from the actual action at street level. His paternalistic watching from the height of the second floor of women walking through the late night (12) is as equally removed as his mistaking of bootleg CD sellers for drug dealers (147) and his non-recognition of Baxter and Nigel as the figures sitting on the bench (213) waiting for

⁴⁷ In “On the Salubrity of Sites”, Robert Rotenberg identifies two historical features that would have contributed to the development of Adam’s garden square in front of the house. The first was the eighteenth century opposition of garden with increasing urbanization and the second would be the nineteenth century marker of affluence in having a private garden. As a public space, the square in front of Henry’s house is ostensibly public, but his attitude toward it and its location within a small segment of central London still reflect the wealth that his townhouse represents and Henry’s remove from the larger London outside the square.

his family to return home. Henry's view is selective, relishing the cosmopolitanism of the Indian hostel across the way, while overlooking the threat to his idealized domestic scene.

The contradiction between Henry's image of the city and the image of those using the square demonstrates a key feature of the city according to Henri Lefebvre, who suggests that the multiple individuals and social spaces of the city tend to spatial contradiction because of the freedom of the individuals within them (331). Even the conflict of others is remote in Henry's contemplation of the square. As he watches a drug-using couple arguing in the square, his first thought is to recall the aphorism that "a desert, it is said, is a military planner's dream. A city square is the private equivalent" (McEwan 59). Henry's equation of the city square with the desert in military planning makes explicit his attitude toward the drama being enacted in the square by drawing our attention to his distance from the action, like a General orchestrating moves from far behind the lines. (It also recalls his misunderstanding of Daisy's recitation of "Dover Beach.") His statement connects the cosmopolitanism elicited by his contemplation of the square with the military information complex that characterizes contemporary warfare, itself a means of reinforcing imaginary national boundaries like those that define the greater Britain that London represents. Chris Hables Gray calls the activities of contemporary warfare a "cyborg body politic" meaning that "the societies from which the militaries of the world come, and the societies that they attack, are all cyborgian even when they aren't the same. Systems are mobilized and systems are targeted, not humans, nor machines alone. Bodies are seen as components, productive or superfluous only in the context of their cyborgian relationships" (216). In Henry's contemplation of the square, the planners of the past century are aligned with contemporary military maneuvers through the military intelligence that imagines the desert or the square as a place of engagement. Gray's statement suggests that information lies at the heart of

this cyborg body politic, but it also returns us again to the body as a key component of this vision in the same way that the “teeming” masses of London are the means by which Henry imagines the city.⁴⁸

The disparate threads of Henry’s attitude toward the city, metonymically displayed for him in the square before his front door, come together in Henri Lefebvre’s description of the role of space and the body in the construction of national identity. For Lefebvre, every space is a product of its history, which is in turn grounded in nature (for example, early measurement systems were based on the body and each social group would have had its own set of measurements). We seek to homogenize these measurements so that we can eliminate the specificity of the body in order to facilitate trade and other social relationships. The nation might also be said to be grounded in geography and history (lived experience), or in ideology (a mental space, like Anderson’s imagined community). Nationhood from a spatial perspective implies a hierarchized series of centers, primarily markets and the violence of the military (Lefebvre 112). The bodily basis for the production of space is retained in the city through its position as a space in which struggle takes place, the struggle of arguments that Henry sees in the square, and the larger struggles that a cosmopolitan city like London experiences:

There is nothing more contradictory than ‘urbanness’. On the one hand, it makes it possible in some degree to deflect class struggles. The city and urban reality can serve to disperse dangerous ‘elements’, and they also facilitate the setting of relatively inoffensive ‘objectives’, such as the improvement of transportation or of other ‘amenities’... The city and the urban sphere are thus the setting of struggle; they are also, however, the stakes of that struggle. (Lefebvre 386)

⁴⁸ Henry’s detachment from those who occupy the city with him echoes what Edward Soja describes as a natural sort of activity because human beings understand their world through a combination of distancing themselves from it and analyzing their relationship to it; this produces objectification (131-2).

Dangerous ‘elements’ like Baxter can certainly be absorbed by the city, and if Henry had not turned down the street on which he collided with Baxter, he might never have had to encounter the ‘elements’ of the city that are the source of those conflicts.

The city is more than just a social space in which class conflict can play out, however; it is also a space that creates, and is created by, the technologies that construct it, such as those of transportation and other amenities identified by Lefebvre.⁴⁹ R. L. Rutsky describes how technology in the twenty-first century continues to shape the contemporary city, both in its planning, and in the continued operation of its systems, how “this linkage of the complexity of high-tech microcircuitry and that of the technological city is more than merely metaphoric; for, as microchips become increasingly complex, miniaturized, dense, their functioning more incomprehensible, their form more ‘secret,’ the world comes to be seen as similarly complex and incomprehensible, as indistinguishable from technology” (Rutsky 113). For Henry Perowne, who believes in progress by increments, technology should not be so incomprehensible. Neither should his city be made incomprehensible by visions that oppose his own. Henry’s response to the demonstrators protesting the U.K.’s intent to join the “coalition of the willing” in Iraq belittles their efforts as useless (192),⁵⁰ just as he suggests that his daughter’s opposition to the war is a result of maternal hormones (226). His argument in support of the war echoes Gray’s description of cyborgized war – a strategic strike against a target that overlooks the human bodies that would be harmed in the conflict because they are the bodies of those on the other side (Gray 217).

⁴⁹ Similarly, Edward Soja notes that the *fin de siècle* technological changes and ways of knowing the world of modernity (1880-WWI) altered perception of time and space. Space took a back seat in the development of social theory in this same period of modernity, even when European industry expanded into other non-industrial markets to support its continued growth (Soja 37).

⁵⁰ See Elizabeth Kowalski Wallace’s analysis of Perowne’s ridicule of the protestors in “Postcolonial Melancholia in Ian McEwan’s *Saturday*” for an argument about how this ridicule operates to simplify the complexity of the issues surrounding the impending war.

Henry is a believer in progress and modernity, which the novel suggests creates a discontinuity between his beliefs in progress and justified war, and the real impact of technologies on human bodies as well as the real human tableau of the city in which he resides. In short, Henry's character does not embody the postmodernist suspicion regarding technology and its ability to regulate human bodies, relying instead on a modern narrative of progress. Henry's wholesale embrace of a narrative of progress is seen in his interaction with his poet father-in-law, Grammaticus, as he arrives at Henry's home. Pointing to the BT Tower, Grammaticus asks what Henry thinks Robert Adam, designer of the square in which the house sits, would have thought of it if he'd been able to see it at the end of the eighteenth century (See figure 1). Henry replies "he might have taken an engineer's view. All that glass, and the unsupported height, would have amazed him. So would the electric light. He might have thought it more a machine than a building" to which Grammaticus replies that Adam would have thought of it in eighteenth century terms as a cathedral spire as "a religion of the future" (203-4). Henry suggests that it might not be that far off to view the telecommunications tower as the religion of the age. Henry's emphasis in his answer on the marvel of modern engineering counters Grammaticus's more aesthetic view of the tower as an ugly thing with "no grace, no warmth" (ibid.)



Figure 1 View of BT Tower from Fitzroy Square where the fictional Perowne home is located

But it is in an encounter with a streetsweeper that we see just how blind Henry is to how his position influences his belief in progress. After all, he is a surgeon married to a lawyer, who lives in a spacious house in central London that has been handed down through generations. Walking to pick up his expensive Mercedes from the garage, he sees the streetsweeper; although he “feels himself bound to the other man,” his next thought is how reassuring it must have been in past ages to believe that a natural force allotted people their station in life. He muses:

After the ruinous experiments of the lately deceased century, after so much vile behavior, so many deaths, a queasy agnosticism has settled around these matters of justice and redistributed wealth. No more big ideas. The world must improve, if at all, by tiny steps. People mostly take an existential view – having to sweep the streets for a living looks like simply bad luck. It’s not a visionary age. The streets need to be clean. Let the unlucky enlist (74).

As one of the “lucky” ones who do not have to sweep streets for a living, it is easy to believe that the world will slowly improve, continuing the comfort to which Henry has become accustomed. His position seems just as natural to him as it did in that other age. Henry’s attitude reflects not so much the twenty-first century as the nineteenth in its suggestion that the “unlucky” will be those who clean the streets upon which he drives his expensive car. The acceptance that some are unlucky while others are not extends to his view of the patients he operates upon, while also ignoring the privilege that allows some to make the most of their luck, while others are left to “enlist” as streetsweepers.

Mechanical and Organic Prosthetics in *Saturday*

Henry’s view of class issues isn’t the only thing colored by his belief in modern progress; his attitude toward science also reflects a belief that scientific developments are key part of that progress. We see how science has the power to shape the way Henry sees the world through biology as well as through his relationship with the technologies that surround him. In Henry Perowne’s attitude toward the vehicle that sets in motion the final events of the day, we see how the figure of the cyborg could be used to represent human relationships with technology and with other human beings. As Henry drives to his squash game, he considers his car (justifying its expense by telling himself that if he didn’t own it, someone else would): he is aware that a Mercedes S500 is a luxury vehicle that advertises his wealth, so that “for months he drove it apologetically, rarely in fourth gear, reluctant to overtake, waving on right-turning traffic, punctilious in permitting cheaper cars their road space.... The car gives him vague satisfaction when he’s driving it; the rest of the time it rarely crosses his mind. As its makers intended and

promised, it's become part of him" (74-5). It is only in relation to this machine that Henry allows himself to contemplate the position that his occupation affords him in British society. But even then, his apologetic attitude seems to simply reinforce his privileged position as a surgeon living in a large townhouse in central London and his "punctilious" permitting of "cheaper cars their road space" bespeaks a kind of paternalist or elitist generosity towards those who have less. Further, his contemplation of the car is intimately connected to his valorization of progress as an admirable goal for human society. As he drives it, he thinks

the future will look back on us as gods, certainly in this city, lucky gods blessed by supermarket cornucopias, torrents of accessible information, warm clothes that weigh nothing, extended lifespans, wondrous machines. This is the age of wondrous machines. Portable telephones barely bigger than your ear. Vast music libraries held in an object the size of a child's hand. Cameras that can beam their snapshots around the world. Effortlessly, he ordered up the contraption he's riding in now through a device on his desk via the Internet. The computer-guided stereotactic array he used yesterday has transformed the way he does biopsies. (77)

That subsequent ages might think of them as gods because of their technologies is reflected in his view of the BT Tower as primarily a marvel of engineering, or later, when from the vantage of an elevated roadway he "thinks he grasps the vision of its creators – a purer world that favours machines rather than people" (157). For Henry, the mere existence of such machines is "the tidy future of his childhood science fiction comics, of men and women in tight-fitting collarless jumpsuits – no pockets, trailing laces or untucked shirts – living a life beyond litter and confusion, free of clutter to fight evil" (ibid.) In this vision, progress has eliminated, or at least

reimagined humans to the point that they come to resemble the neat machines of classical science fiction texts.

One way to understand Henry Perowne's view of the people and technologies that surround him can be through the idea of the prosthesis, just as his car is a prosthetic device enabling him to travel quickly in comfort from places to place. Henry's belief in progress as the quintessential activity of human beings means that technology plays a largely positive role in his view of the world. Technology is more than just gadgets and machines, however; it is also the institutions, processes, and techniques that enhance the capabilities of humans.⁵¹ In short, technologies are those things that extend beyond the individual human subject to enhance the capabilities of the body and mind.

The prosthesis originally referred in the seventeenth century to the addition of a syllable to a word, but evolved in contemporary usage into an idea that has more to do with the body than with communication. As Tim Armstrong notes, the desire for the prosthetic is modeled on the body "particularly the deficient body, the telephone emerging from research on the mechanism of the ear; the typewriter from a desire to let the blind write by touch" so that "a mechanomorphic imaginary links the organic to the mechanical, enabling the body to be seen as a motor, and technological society to be seen in terms of the body" (81). Not only is the body a sign of the technological society, but it also becomes the ground upon which the prosthetic operates.

Similarly, the prosthesis emerges in contemporary warfare because modern warfare solicited the development of technologies to extend the human body's capabilities (from tanks, to communication technologies, to poison gas). These extensions meant that "the masculine body's

⁵¹ For more on the ways in which institutions, processes and techniques develop into technologies, see *From Artifact to Habitat: Studies in the Critical Engagement of Technology* edited by Gayle Ormiston.

relation to machinery found a particularly sharp focus in the First World War: in terms of its power to kill and maim, in terms of its rupturing of the integrity of the self in shell-shock, and in terms of a wider statistical appraisal of the body and its value” (T. Armstrong 95). Since then, the extension of human bodies in warfare has continued to the point where Chris Hables Gray has suggested that the human-machine interface in contemporary war produces a cyborg, or posthuman soldier (216).⁵² The implications of using posthuman soldiers go beyond just the deployment of technology on the battlefield with Gray noting that the military drives the development of “cyborgian technosciences” and these technologies show us how a “crisis in war is matched by a crisis in human identity itself” (223).⁵³ How utterly appropriate to this view then is Henry Perowne’s relationship to technology, partially mediated by his belief in a war being waged to potentially eliminate weapons of mass destruction and to topple a regime known for its torture of the (un-enhanced) human body.

Whether in war or in the surgical suite, technology “supplies deficiencies and makes up for absences,” so that this sense of deficiency pervades any discussion of cyborgian technology (T. Armstrong 77). Jacques Derrida’s notion of the supplement – a surplus that is simultaneously an addition and replacement – allows us to consider the relationship between the human body and the technologies that govern it. Derrida’s supplement is linguistic in nature, but its

⁵² Between the Great War and the posthuman soldiers, warfare has increasingly drawn attention to the gap between human bodies and the machinery of war. As Christopher Dewdney notes, the Vietnam War “was the interface of bodies with machines, and the disastrous intersection of flesh with metal moving at high velocities. It was about the vulnerability of flesh, the adaptability of flesh versus the irreducible inflexibility of metal” (12). Vietnam of course was also a war in which technologies like Agent Orange, with its disastrous effects on vegetation and the body, was opposed by the decidedly non-technological guerrilla tactics of the Vietcong. Gray notes that this is a characteristic of postmodern warfare – the co-existence of technology and the organic reality (and frailty) of the human body.

⁵³ A crisis in human identity brought upon by machines is hardly a novel idea, even if Gray’s observation about the military’s increasing cyborgization is astute. E.M. Forster’s “The Machine Stops” (1928) imagined a world of humans dependent upon machines, who are brought to the edge of extinction because of their reliance upon the machine instead of their own senses. The protagonist sums up the problem in the final pages: “we created the machine to do our will, but we cannot make it do our will now. It has robbed us of the sense of space and of the sense of touch, it has blurred every human relation and narrowed down love to a carnal act, it has paralysed our bodies and our wills, and now it compels us to worship it” (110).

characteristics readily translate to the human body. The supplement is “the addition of a technique” that does violence to “natural language” so that “art, *techne*, image, representation, convention, etc., come as supplements to nature” (144). Similarly, the interaction of human body and machine (whether a weapon of war, or a luxury vehicle) is supplementary, substituting and adding at the same time. The luxury vehicle Henry drives adds to his activities by allowing him to move through space more rapidly than otherwise possible, but it also substitutes his body’s expended effort with that of the machine. Henry’s expensive vehicle also marks him socially (whether he drives the status symbol apologetically or enthusiastically) as his son’s claim that it is a “doctor’s” vehicle, suggests.

Implicit also in Derrida’s discussion of the supplement is a distinction between the natural and the supplement. Writing is a supplement in that it is a kind of addition: as Derrida explains, “speech being natural or at least the natural expression of thought, the most natural form of institution or convention for signifying thought, writing is added to it, is adjoined, as an image or representation. In that sense, it is not natural” (144). Substituting “the human body” for “speech” and “technology” for “writing” creates a statement that might act as a definition of the cyborg in that it draws attention to the division between natural and artificial that technology often elicits. As a supplement, cyborg technologies like the ones mentioned by Gray implicitly criticize the human as inadequate and thus in need of supplementing, in need of additional technology. Certainly, those who suggest that humans are toolmakers by nature take for granted that humans will supplement their innate abilities with the tools they create. For Henry Perowne, the science of medicine is the technology that supplements his human nature, so that the genetic determinism that he employs in understanding his family and Baxter is his technique for understanding the world.

The technologies that supplement Henry's view of the world also provide him a sense of control. In the face of the senselessness of Baxter's attack, Henry realizes "he's only ever taken a knife to anaesthetised skin in a controlled and sterile environment. He simply doesn't know how to be reckless" (221). When he enters the surgical suite, "though things sometimes go wrong, he can control outcomes here, he has resources, controlled conditions" (253). This sense of control arises from the "resources," objects, and technologies that Henry uses to repair ailing brains. But these objects cannot remain divorced from the people whom they touch. Just as the undraping of the surgical patient restores the patient's identity like "when a small area of violently revealed brain is returned to the possession of the entire person" (264), the life that objects possess dies without their owners. As he packs up his mother's house after her dementia has forced her to move out, he realizes that life "seemed tenuous when he saw how quickly, with what ease, all the trappings, all the fine details of a lifetime could be packed and scattered, or junked. Objects became junk as soon as they were separated from their owner and their pasts." This leads him to conclude that no one really owns anything: "our possessions will outlast us, we'll desert them in the end" (284) as if those objects, like the objects he uses so carefully to fix Baxter's broken brain, are only infused with life when they are in use.

On the ICU at night, Henry thinks that the machines and their "winking coloured lights" remind him of "neon signs in a deserted street – the big room has the ephemeral tranquility of a city just before dawn" (270). In some ways, Henry's appreciation for the engineering and technological marvels of the cosmopolitan city in which he lives represent his attitude toward progress, technology, and the people who inhabit that city. Just as he admires how the brain cannot reveal either the beauty of the mind (represented in Arnold's poem that Daisy reads) or its degeneration (into criminality like Baxter's or the sadism of the Iraqi regime), Henry's

admiration for the city he lives in is matched by his conviction that the history of London is also the source of its decay. While waiting for his phone to connect to his wife's office, he begins to think about her office, and the hospital, where everyone is too busy to clean up the refuse that piles up in abandoned rooms and corners: "Sick buildings, in use for too long, that only demolition can cure. Cities and states beyond repair. The whole world resembling [his son] Theo's bedroom. A race of extraterrestrial grown-ups is needed to set right the general disorder, then put everyone to bed..." (McEwan 122). The fantastical solution suggests that Henry's preoccupation with neatness is impractical, that it borders on the pathological. Certainly his contemplation of his mother's life suggest that neatness is akin to pathology: "she was a woman who gave her life to housework, to the kind of daily routines of polishing, dusting, vacuuming, and tidying that were once common, and these days are only undertaken by patients with obsessive-compulsive disorders" (157).⁵⁴ His mother's orderliness was an expression of her love, and it only occurs to Henry on this Saturday, after his mother's memory is gone and there is no way to share the revelation with her, that his own love of the surgical suite may stem from the same impulse (158). Henry's whole life in fact is an attempt at classification, of organizing people and things into categories to contain them: his family, Baxter, the sections of the brain on which he operates. Genetics is one means by which he orders the world; he is a "professional

⁵⁴ In Henry's recognition of his mother's desire for neatness, we see we see echoes of Mary Douglas's observation that "there is no such thing as absolute dirt: it exists in the eye of the beholder" (12); the notion of 'dirt' can also be extended to waste. Both are cultural constructs, the usefulness of the object being determined by the use to which a culture puts it. Even bodies and body parts can be waste, according to Susan Squier. Discussing Michael Thompson's notion of rubbish theory as a state between the durable and the transient, Squier suggest that "body parts or products that can be *used*, in other words, are no longer rubbish. Thus while rubbish is something we customarily discard, the concept itself is culturally constructed." As a category, rubbish is "a liminal zone, [and as such] it functions as the machine or enabling space for cultural and material transformations" (Squier 207). Rubbish theory "signal's the body's irreducible presence" (T. Armstrong 66). Of course in Henry's mother's case, the body is an irreducible presence, even as her mind slips into a more tentative relationship with the world around her; however, his love for her ensures that neither she nor her body will be constructed as rubbish.

reductionist” for whom the “invisible folds and kinks of character, written in code, at the level of the molecules” (182) are the reason why some succeed and some fail in the social realm.

Like his professional life, Henry Perowne’s relationship with his family is represented through his understanding of genetics and the role it – sometimes arbitrarily – plays in the development of individual characteristics. Henry’s family is more than just the sum of its genetics, but Henry Perowne never interrogates the role of class and privilege in producing the artists and poets of the family. Henry’s relationship with the victim/criminal Baxter is also mediated through his understanding of Baxter’s physical disability, which too has a genetic basis that will dictate the course of his physical decline. Here again, Henry fixates on the genetics of Baxter’s disease, finding compassion for the man’s victimization at the hands of a genetic twist of fate. But even this compassion is mediated by the technology of medical bureaucracy where Henry can “exercise authority and shape events” by ensuring that Baxter does not strand trial for the home invasion; rather, he paternalistically suggests that “the system, the right hospital must draw him in securely before he does more harm” (288). Henry Perowne sees the world through biologically-tinted glasses, remaining in part blind to the role that class and privilege play in both his life, and the life of his family and the unfortunate Baxter.

In a novel like *Saturday*, both genetics and technology serve to highlight social differences, but they also highlight how bodies are constructed, through disease, heredity and reproduction. Henry Perowne uses medical technology to help him save lives, but there are also points in the novel where technology fails, where Arnold’s poetry, his son’s blues performance, his daughter’s pregnant body and his need for a tool to extract himself out of the mess he finds himself in after Baxter’s home invasion, leave him in the realm of the human, without any high-tech gadgets to save him. The prosthetic technologies that Henry so admires: his car, the surgical

suite, even the architecture of roadways and engineering marvels like the BT Tower, can only supplement Henry's lack of empathy for London's other inhabitants to a certain point. For all of his belief in the progress of the twentieth century, Henry's vision of the world ignores those parts of it that do not fit into the neat categories characterized by his family (and their many talents), and the London square on which he lives.

CHAPTER 3 Magical and Metamorphosing Posthumans

What were these authors of reputation doing - grown men and women of the twentieth century - granting supernatural powers to their characters? ... It isn't an article of faith with him, he knows it for a quotidian fact, the mind is what the brain, mere matter, performs. If that's worthy of awe, it also deserves curiosity; the actual, not the magical, should be the challenge. This reading list persuaded Perowne that the supernatural was the recourse of an insufficient imagination, a dereliction of duty, a childish evasion of the difficulties and the wonders of the real, of the demanding re-enactment of the plausible.

Ian McEwan *Saturday*

Henry Perowne objects to the magical realist texts that comprise the “reading list” his daughter assembled specifically because the realism in those texts is overlaid with the magical, and Perowne thinks that the imaginative mind arises out of the reality of the organic brain.⁵⁵ Perowne's criticism of these texts is a result of self-proclaimed rationalism as a scientist. His emphasis on the material basis of mind reminds us that the mind and body cannot be separated, but he also overlooks the interconnectedness of fictional representation and the “actual.” The supernatural in fiction is not simply the “recourse of an insufficient imagination”; rather, it is an expression of that imagination through an integration of the magical with the real. What his valuing of rationalism does is reinforce the division between the purported rationality of science

⁵⁵ Henry Perowne's descriptions of the magical realist texts his daughter gave him indicate that he attempted to read Salman Rushdie's *Midnight's Children* and *The Satanic Verses* and Graham Swift's *Waterland*. None of the magical realist texts that Perowne reads are the Latin American practitioners of magical realism with whom the term originated, which might suggest that his objections are not to magical realism, but to its co-optation by writers who live far from the original source of the genre.

and the fictitious nature of narrative; but as Northrop Frye suggests, this is a reductionist vision of the two categories because “you can’t distinguish the arts from the sciences by the mental processes the people in them use: they both operate on a mixture of hunch and common sense” (*The Educated Imagination* 6). In other words, reading literature and performing science are both partly imaginative and partly rational. Similarly, Susan Squier identifies the “imagery and metaphor” of both literary and scientific narratives as working objects for biotechnology because they “exist in a reciprocal relation to the lived bodies that are their ultimate referent: both constituting and being constituted by them” in an imaginative reciprocal relationship (16).

This chapter describes two novels by Salman Rushdie in order to examine the ways in which the techniques of magical realism produce characters whose dual nature, like Dr. Jekyll and Mr. Hyde, suggest that posthuman figures may be complexes of human personality traits. Rushdie’s first novel, *Grimus* (1975), defies categorization as critics have noted, because it uses multiple genres, modes, and narrative structures to tell its story, while *The Satanic Verses* (1988) demonstrates how the interplay created by merging fantastical elements with realist ones allows the author to explore questions of family, inclusion, and the failures of objectivity in maintaining and policing the boundaries of the community. The magical realist elements of *The Satanic Verses* are not unique in Rushdie’s oeuvre; rather, as Roger Clark notes in *Stranger Gods*, Rushdie’s early novels (including *Grimus* and *The Satanic Verses*) all employ magical realist techniques to create strange worlds (7). In *Grimus*, Flapping-Eagle’s consciousness merges with Grimus’s at the end of the narrative and he must learn to use this new hybrid mind, while in *The Satanic Verses*, Saladin Chamcha’s transformation splits his personality, revealing the monster inside. These novels are hyper aware of the connection between being human and the human

body, so that the clash of magic and realism in the texts draws attention to the duality of human experience and consciousness.

Making Space for the Cultural Posthuman

The hybrid blend of bodies in *The Satanic Verses* and *Grimus* is more than just pieces in the words games that Rushdie plays. Rather, the blurring of boundaries at these different levels opens a space within the text that demonstrates how slippery the definitions of things like genres, categories of knowledge, or the posthuman itself can be. The critique of posthumanism articulated by writers such as Katherine Hayles, that posthuman dreams simply reify the white, male body of liberal humanism, draws our attention to how this categorization of the posthuman body ignores the particularity of some bodies (*How We Became Posthuman* 4-5). Hayles expresses amazement that anyone would want to download their mind out of their body and into a computer, writing “how could anyone think that consciousness in an entirely different medium would remain unchanged, as if it had no connection with embodiment?... In fact, a defining characteristic of the present cultural moment is the belief that information can circulate unchanged among different material substrates” (1). Hayles’s vision of the posthuman is that the material substrate (i.e. the body) does make a difference to the information that circulates within it (i.e. the mind). Jean Francois Lyotard’s description of an absence of a ground in which memory is localized (63-4) acts in the same way that the vision of the posthuman as a liberal humanist subject does in denying the specificity of place; it denies the variation inherent in multiculturalism, race, gender, sexual orientation, or any of the other categories that problematize the vision of a white male heterosexual posthuman future. The posthuman body

may be best theorized within a created space that is neither at the center – the liberal humanist body that Hayles describes as the dream of transhumanists – nor at the margins – the marginalized bodies of minorities.

Homi Bhabha's conceptualization of a "Third Space" which emerges out of the intersection of the spaces of the colonial subject and the colonizer provides a model for thinking about the space that posthuman bodies might occupy. As Bhabha explains, the Third Space disrupts binaries because "this Third Space displaces the histories that constitute it, and sets up new structures of authority, new political initiatives, which are inadequately understood through received wisdom" (qtd. in Rutherford 211). Creating a *postcolonial* space that lies outside the binarism of Self and Other/center and periphery offers the possibility of transcending such dualisms so that Bhabha's Third Space can be a conceptual liminal space, a place that is neither inside nor outside.

Third Space also resembles a trope employed by Thomas Foster in *The Souls of Cyberfolk*, which he uses to describe the space between nature and culture. In the context of the deployment of technologies, Foster's third space is what he calls "hardwiring" where this hardwiring represents a freedom from the nature/culture binary. Foster writes, "one of the enduring legacies of cyberpunk fiction is its use of the term 'hardwiring' to represent forms of embodiment and cognition that occupy this Third Space, between natural and social or cultural determinations" (23). Foster's third space is a cultural space "between regarding embodiment as inevitable destiny and embracing disembodiment as an escape from that trap" (Foster 138) that like Bhabha's Third Space destroys cultural hierarchies and ensures that "the meaning and symbols of culture have no primordial unity or fixity" but "[carry] the burden of the meaning of culture" (37-8). Here multiple conditions can exist simultaneously, offering a way to imagine

what a posthuman community might look like and how the immigrant experience might be envisioned within it.

It is through the technological developments of the twentieth and twenty-first centuries that we begin to see how a Third Space might operate in a postmodern marginal text. If “modernity, defined in terms of an instrumental technology and rationality, has long been the basis on which Western, patriarchal cultures have privileged themselves over their ‘nontechnological’ others” and these discourses “that perceive the world in terms other than those of rational, scientific knowledge and technological control are necessarily characterized as antimodern, irrational, often even as ‘primitive’” it means that the implications of technology are not limited to highly technologized cultures: “for, if in high technology the modern conception of technology has changed, so too has the relation of ‘technoculture’ to those supposedly nontechnological ‘other’ cultures and discourses that modernity has always devalued, excluded, or repressed” (Rutsky 3). Magical realism, as a genre and a technique, is frequently characterized as a clash between the technoculture of the colonialist and the folklore of those ‘nontechnological other’ cultures. Neil Kortenaar, in his study of Rushdie’s magical realism suggests that “a critical consensus has it that magic realism is particularly well suited to the handling of materials from the Third World, where colonialism has resulted in the juxtaposition of cultural frameworks with different origins and where uneven development means that different modes of production exist side by side” (766).⁵⁶ Given the suggestion that different

⁵⁶ Describing Salman Rushdie as a postcolonial writer relies upon Rushdie’s own declaration of his identity. Rushdie himself has described his relationship to India where he was born as a kind of fiction, the “imaginary homeland” that he writes of in his volume of essays by the same name. Rushdie recognizes that the past is a country to which the emigrant can no longer return but also that “fantasy, or the mingling of fantasy and naturalism, is one way of dealing with these problems” (“Imaginary Homelands” 19). The recurring themes of displacement and identity in Rushdie’s work suggest that the literary solution to these problems cannot be solved quickly, or in few words. In fact, Minoli Salgado suggests that Rushdie’s work, “foreground[s]... the cultural co-ordinates and class affiliations of Rushdie’s own hyphenated identity. Although he periodically appears in the British press as the champion of free speech or the voice of enlightened humanism he is, like all enforced exiles, deeply isolated: banished, it could be claimed, into the

modes of production make magical realism an effective means for understanding the “materials from the Third World,” it might also be that the different modes of production of magical realism and science fiction as they meet in *Grimus* might be effective means for understanding the posthuman.

Magic and science (or technology) are both used to construct community and are represented as embodiments of power because of their ability to explain how the world works. Magic realism complicates a depiction of the realist world with fantastical elements like the posthuman because “at the heart of the uncertainty about magical realism are the meanings that the term is assumed to signify: ideas clustered around notions of narrative and representation, culture, history, identity, what is natural and what is supernatural” (Warnes 4). Wendy Faris suggests that the hallmark of magical realism is an “irreducible element” of magic which is strong enough to unsettle the reader’s perceptions as the narrative merges different realms, disturbing ideas about time, space and identity (7). The magic in the narrative of the text often highlights important issues in the text (9) and the presence of the magical in the real may cause the reader to “hesitate between two contradictory understandings of events, and hence experience some unsettling doubts” (17). In Rushdie’s work, magical and technological (or scientific) understandings of events create the kind of doubt Faris identifies.

Magical realism exhibits a kind of “in-betweenness” that places it at the margins of the real and the fantastical and lends itself to an uncertainty that creates unpredictability in the narrative (Faris 88). One suspects it is this unpredictable nature of magical realist narrative that is reflected in Henry Perowne’s discounting of the genre as worthy of attention. Similarly, David Lovekin notes that in scientific discourse,

only domain to which he can claim full citizenship, that of the imagination” (46). While Rushdie’s career as a writer really only began after his education in England and move to London, his past as a citizen of the Empire influences his writing in ways that mark his novels in a distinct fashion.

the only mystery we are able to respect is that provisional and transient unknown that is open to scientific and technological inspection.... The scientific or technical unknown is a nontranscendent mystery, which may appear as an outgrowth of culture. The scientific or technical unknown is that which is available to reason. A transcendent sense of mystery, however, is not available to reason but is a function of the imagination. (74)

Although scientific unknowns are imagined to be transient as well as nontranscendent, Lovekin goes on to note that a transcendent sense of mystery is what makes culture possible.⁵⁷ Although it might be a stretch to say that culture requires magical realist texts, it certainly seems reasonable to suggest that culture requires the imaginative impulse expressed within literature. What Henry Perowne might be understood as objecting to is the indeterminacy of magical realism *as a literary genre*. Christopher Warnes describes magical realism as being characterized by a “hermeneutics of vagueness,” so that defining magical realism systematically erases boundaries, which “impl[ies] such boundaries cannot hold” for the critic (7). Just as the magical realist genre disturbs the boundaries that Henry Perowne draws between the real and the imaginative, it also erases boundaries between itself and other closely related genres. This indeterminacy is productively used by writers like Rushdie, whose first novel *Grimus* is particularly difficult to categorize as it moves between generic modes.

⁵⁷ When scientific unknowns are transient, they may remain mysterious even once they are “solved.” For many people, the shift during the twentieth century from Newtonian to quantum physics as a means of explaining the world means that scientific knowledge became even more mysterious because the principles of quantum physics are based on the movement of subatomic particles that cannot be observed first-hand. Thus to most people, “it appears that science knows no inherent limitations. Thus science [is] magic, and the scientist [is a] wizard, *deus ex machina*, or oracle” (Holton 135). The magic of science finds expression in literatures that employ figures of that science to push the boundaries of the possible and of the reality we experience everyday. This push is precisely what Henry Perowne misses when he dismisses magical realism as having no value.

The Satanic Transformations

Salman Rushdie's *The Satanic Verses* is probably best known for its instigation of what has become known as The Rushdie Affair.⁵⁸ This focus on the religious responses to the novel and their implications, while an important episode of censorship and no doubt a contributor to the book's subsequent success, is of secondary importance to this chapter. The Rushdie Affair and *fatwa* grow out of the section of the book dealing with the fantasies and dreams of Gibreel Farishta as he comes to grips with his transformative experience of the fall; in a complementary storyline, his companion and the other sole survivor of the *Bostan* AI Flight 420 from India to England, Saladin Chamcha, undergoes a bodily transformation that marks him as a monstrous invader. It is Saladin's metamorphosis that is the subject of this chapter. As much as *The Satanic Verses* resists summary because of its breadth of characters, place and storylines, I will provide a brief outline of the parts relevant to the story of Saladin's transformation in order to demonstrate how transformation functions to draw our attention to the body and identity.

The novel begins with the improbable plunge by Gibreel and Saladin from a broken airplane high above England. They survive, and Gibreel starts to take on angelic characteristics while Saladin takes on devilish ones. The transformation that Saladin undergoes directly addresses the idea that the body represents the most identifiable marker of belonging both to the nation and humanity itself. The notion that Saladin is an alien invader is evident in the police response to his presence, as a passport-less and demonic-looking invader, who has begun to sprout horns as a result of his fall from the fatal explosion on the airplane. Saladin is arrested,

⁵⁸ The controversy created by *The Satanic Verses* included protests by Muslim readers that Rushdie portrayed the prophet in a blasphemous manner, resulting in a *fatwa* issued by the Ayatollah Khomeini of Iran calling for Rushdie's death. The far flung effects of the novel and the protests against it extend even into literature, where it is represented in Zadie Smith's *White Teeth* in an episode where Millat and KEVIN attend an anti-Rushdie rally, burning his books (Smith 197).

then released, all the while, transforming into a devilish figure. When he finally returns to his normal human form, he finds that the effects of his devilish transformation linger, he destroys Gibreel's relationship with his lover Alleluia Cone, reconciles himself with his father from whom he is estranged, and finally accepts himself as he is and settles in Bombay.

Saladin Chamcha's bodily transformation marks him as different, though not strictly as a posthuman, since his new body offers few of the benefits that the posthuman body's augmentation or supplementation of the body's natural human abilities do. Although his transformed height, odor, and hairiness are beyond normal human parameters, these changes offer few benefits for Saladin. Rather, he is a fantastical kind of posthuman other. After falling from an airplane that explodes mid-air, he and Gibreel Farishta are physically transformed; Gibreel into an angelic figure, and Saladin into a demonic one. Saladin, after being forcibly detained by the police who do not believe him to be a British citizen, is forced to hide in the attic of the Shaandaar bed and breakfast in Brickhall as he slowly transforms into a monstrous devil-figure. This is difficult for Saladin because he self-identifies as British, and subsequently, when told his place during this trying time is with "his" people, responds "I'm not your kind... You're not my people. I've spent half my life trying to get away from you" (Rushdie *The Satanic Verses* 262). Saladin's desire to shed his identity as a brown-skinned immigrant and integrate into British society makes his magical transformation into a distinctly non-British, animal-like fantastical person all the more dramatic. The magic of Saladin's transformation and the magical realist nature of the narrative, allow Rushdie to question how those whose bodies (and minds) differ from the norm are included or excluded from the communities in which they find themselves.

Posthuman communities become important in novels like *The Satanic Verses* because of the relationship between the posthuman and the postcolonial subject. The similar position of the posthuman and the postcolonial subject in relation to dominant structures can be seen in the description of the occupants of the Shaandaar bed and breakfast in *The Satanic Verses* that conflates their relative position in English society and their identity. The bed and breakfast is used by borough councils as temporary public housing. What this means is that whole families of immigrants live in a single room in substandard conditions. The temporary accommodations define their occupants, so that “behind six doors that opened a crack every time Chamcha went to make a phone call or use the toilet, [there were] maybe thirty temporary human beings, with little hope of being declared permanent” (273). Lacking a position within the permanent social structures of the community, the occupants of the bed and breakfast become temporary themselves. They await the day when they will become full members of society; right now, they are neither hopeful immigrants nor full citizens.

The city of London in which most of the action of the novel takes place plays a significant role in the narrative, just as it does as the destination of choice for immigrants from the former colonies when they choose to migrate to the colonial centre. John Clement Bell suggests that in *The Satanic Verses* imagination creates the city itself: “Through a combination of magic and realism Rushdie portrays a city lurching through a painful process of renewal and transformation that will inaugurate a future in which the spatial and racial geopolitics of the past can become obsolete” (202). Saladin is able to transcend the unreal vision he imagined as a child in Bombay of London as the city of monuments because of the bodily transformation he undergoes during the novel - this forces him into a kind of “magical reality check” in which he is forced to enter the crowd and seek refuge with the Bangladeshi Sufyans (203). Bell further

suggests that Saladin's experience in London is overdetermined by his position within the empire and that his bodily transformation forces him to embrace his Indianness.

Saladin's changed appearance stigmatizes him in a highly visible way. His transformation is worth examining in detail for its complexity, totality and bestiality:

His horns ... had grown both thicker and longer, twirling themselves into fanciful arabesques, wreathing his head in a turban of darkening bone. He had grown a thick, long beard, a disorienting development in one whose round, moony face had never boasted much hair before; indeed, he was growing hairier all over his body, and had even sprouted from the base of his spine, a fine tail that lengthened by the day and had already obliged him to abandon the wearing of trousers; he tucked the new limb, instead, inside baggy salwar pantaloons filched by Anahita Sufyan from her mother's generously tailored collection.... Even his appetites were altering. Always fussy about his food, he was appalled to find his palate coarsening, so that all foodstuffs began to taste much the same, and on occasion he would find himself nibbling absently at his bedsheets or old newspapers, and come to his senses with a start, guilty and shamefaced at this further evidence of his progress away from manhood and towards – yes – goatishness. Increasing quantities of green mouthwash were required to keep his breath within acceptable limits.

(283-4)

By the end of his transformation, "Chamcha had grown to a height of over eight feet, and from his nostrils there emerged smoke of two different colors, yellow from the left, and from the right, black. He was no longer wearing clothes. His bodily hair had grown thick and long, his tail was swishing angrily, his eyes were a pale but luminous red" (300). For Saladin Chamcha, this transformation, which is at first distressing to him, quickly becomes a source of anger. As we

will see shortly, this anger is necessary, both for Saladin himself on a personal level, and because he is a representative of an immigrant class that is frequently disenfranchised by those who do not embrace the notion that multiculturalism is an admirable national goal.

The transformation of Saladin and Gibreel as they fall through the clouds triggers in Saladin a forceful desire to live so that he wishes

to have nothing to do with his pathetic personality, that half-reconstructed affair of mimicry and voices, [the desire to live] intended to bypass all that, and he found himself surrendering to it, yes, go on, as if he were a bystander in his own mind, in his own body, because it began in the very centre of his body and spread outwards, turning his blood into iron, changing his flesh to steel. (9)

Although the language of transformation is machinic – with Saladin’s flesh and blood turning to iron and steel – the creature he becomes is the furthest thing from a cyborg or machine as possible, a devilish figure marked by its surfeit of bodily odor, hair, and external markers of the animal such a tail and horns.⁵⁹ The text tells us that Saladin feels his blood and flesh turning to iron and steel, yet when we are later provided with a description of his appearance, the horns on his head (and later the hair, tail, and even halitosis) point to a monster. In this progression, the human turns into a machine and then into a monster. Given that the monster Saladin turns into is animal-like in its hairy, horny appearance, and Donna Haraway identifies the cyborg as blurring boundaries between human/machine *and* between human/animal, this transformation suggests that the “machine” and “animal” here are manifestations of the same thing. That is, they are

⁵⁹ While the animal-like monster is not the same as the immigrant, they do share an alienation from the dominant discourse and their relationship to the community is equally troubled. Magrit Shildrik in her study of embodied monsters declares that “where normative embodiment has hitherto seemed to guarantee individual autonomous selfhood, what is monstrous in all its forms - hybrid creatures, conjoined twins, human clones, cyborg embodiment and others - disrupts the notions of separation and distinction that underlie such claims” (2). This disruption of autonomous selfhood arises because it violates the notion that it is only a normal body that allows one to participate in the social realm and in public citizenship. Saladin’s non-normative monstrous body simply makes evident the othering that emerges from his status as an immigrant.

oppositions to the naturalized human. The hybrid human/machine and human/animal are both the same thing; it does not matter if it is machine or animal that is half of the equation; what matters is that that half of the equation is not human.

The importance of Saladin's transformation is not so much *what* he becomes, but that he becomes 'other' to that which he was before. Further, Saladin is not aware of the exact moment of transformation, but his transformation is intimately connected to Gibreel's angelic transformation as we see when the text conflates their identities: "for whatever reason, the two men Gibreelsaladin Farishtachamcha, condemned to this endless but also ending angelicdevilish fall, did not become aware of the moment at which the processes of their transmutation began" (5). Not only are their respective transmutations intertwined, they also signal a loss of individual identity. It is no coincidence that these two men are actors: "mimic men" who "mimed to playback singers" (3) or act as "the Man of a Thousand Voices" (60) or who shed their "bodies to put on voices" (61).⁶⁰ Their transformations force them to reconcile their personal identities, including the relationship between their origins and their destination, with their public ones. Gibreel stumbles through his transformation, trying to make sense of the visions he experiences while Saladin struggles with understanding how his transformation relates to his identity as an Indian-born Englishman.

Saladin's struggles to adjust to this new state of affairs are tied to his status as an immigrant to the imperial center and his fall into his adopted homeland produces a sense of estrangement. When Saladin discovers he has survived the fall from the airplane, he is confused

⁶⁰ A psychoanalytic reading of Saladin Chamcha's transformation might point out how his father's declaration that he is a "demon from hell" and a possessed man for wishing to become an actor might explain why Saladin's transformation takes the form that it does (48); however such a reading would require the reader to accept that Saladin's transformation is all in his mind (as the reader suspects most of Gibreel's is), a supposition that the text resists in its narrating of the response of the police and hospital staff, but more importantly the response of the Black and Asian community to Saladin's demonic presence, where he is an actualization *and* an incarnation of their dreams (295-6)

by the sky, which is the wrong color: “he blinked hard but the colours refused to change, giving rise to the notion that he had fallen out of the sky into some wrongness, some other place, not England or perhaps not-England, some counterfeit zone, rotten borough, altered state” (136). Certainly the England that Saladin enters is not the England he has embraced and integrated into his personal identity; the England that imprisons him for his different appearance is not the England he married (through his very English wife, Pamela Lovelace); nor is it the England whose accents he mimics in his acting work (which dries up once he is transformed). Since the England he is entering is unfamiliar, he determines that “if he were to survive he would have to construct everything from scratch, would have to invent the ground beneath his feet before he could take a step” (136). This notion of inventing the ground anew is a continuing motif in Rushdie’s work, as expressed in *Imaginary Homelands* (1992) or his later novel, *The Ground Beneath her Feet* (2000), that identity relies upon an interaction with the spaces in which one finds oneself. A similar use of space is also central to Michel de Certeau’s argument in *The Practice of Everyday Life* that the pedestrian acts of moving through the city are akin to the speech act in that the walker actualizes possibilities through choices made in moving through those spaces (98-99). de Certeau suggests that users, such as colonized subjects, frequently make different use of systems of representation (including spatial ordering) than their original intention (xiv). As a transformed immigrant, Saladin must create a new identity, which can only be created one day at a time, or one step at a time, as he moves through this now unfamiliar England.⁶¹

⁶¹ It is at this point that the reader understands the purpose of the epigraph of the novel:

Satan, being thus confined to a vagabond, wandering unsettled condition, is without any certain abode; for though he has, in consequence of his angelic nature, a kind of empire in the liquid waste or air, yet this is certainly part of his punishment, that he is ... without any fixed place, or space, allowed him to rest the sole of his foot upon.

Daniel Defoe, *The History of the Devil*

Saladin's metamorphosis is explained in the novel through several lenses, including evolutionary theory. Rushdie uses the ideas of Lamarck and Darwin playfully, exchanging the serious nature of scientific theory for the ludic proposition that evolution is as inexplicable as the magical transformation of one man into the other that takes place during Saladin's fall. As Saladin and Gibreel fall, the narrator tells us that "changes took place in delirious actors that would have gladdened the heart of old Mr Lamarck: under extreme environmental pressure, characteristics were acquired" (6). Similarly, Muhammad Sufyan, proprietor of the Shaandaar bed and breakfast where Saladin hides out during his transformative period, suggests that even Charles Darwin "accepted the notion of mutation in extremis, to ensure survival of the species" (though Darwin's notion of mutation was at the level of the species rather than the individual) (260). Evolutionary theory appears later in the narrative as well, as Saladin contemplates whether his transformation created a permanent change in his temperament. As Saladin listens to a creationist on a taxi radio, he considers the theory of punctuated equilibrium:

that major changes in species happened not in the stumbling, hit-and-miss manner first envisaged, but in great, radical leaps. The history of life was not the bumbling progress – the very English, middle-class progress – Victorian thought had wanted it to be, but violent, a thing of dramatic transformations: in the old formulation, more revolution than evolution. (433)

His own initial transformation and the reversal of that change are both violent and dramatic, suggesting that Rushdie's use of transformation is deliberately violent, like the violence of the canines that Zadie Smith uses to describe the immigrant experience. In this narrative, as we will see, the violence, or revolutionary nature of change, extends beyond Saladin's own life to the community more broadly.

The choice of philosophies Sufyan offers Saladin in *The Satanic Verses* to explain the latter's magical transformation mirrors Wendy Faris's observation that the magic of magical realism is either already present in the story or emerges out of a reading of that narrative (20-1). Sufyan suggests that Saladin has two options for thinking about his transformation: either he follows Ovid in believing the form of his metamorphosis reflects an inherent characteristic or Lucretius in that the form he takes in his metamorphosis represents a fundamental alteration of his essence imposed by external forces. Saladin experiences similar category confusion when he falls toward London at the beginning of the novel. When he thinks he has fallen into some other place "not England or perhaps not-England" (136), it is as if he might be in another country, or in an alternate England, one that lies underneath the one he is familiar with.⁶² Similarly, one can read the "irreducible" magical elements of magical realism as emerging from the narrative itself, or as the imposition of a category upon unfamiliar stories of folklore (Faris 7). The ambiguity inherent in Saladin's inability to tell if he is not in England or in "not-England," and the ambiguity inherent in the magical events in an otherwise realist text opens up a space in which identity, and even space and time themselves are no longer stable categories. If magical realism is "a mode of narrative that naturalizes the supernatural, presenting real and fantastic coherently and in a state of equivalence with one another" (Warnes 6) then the interpretive space created by this equivalence begins to sound like Bhabha's description of the Third Space as that which "sets up new structures of authority" (Rutherford 211) and creates an "enunciative split" that "destroys the logics of synchronicity and evolution which traditionally authorize the subject of cultural knowledge" (Bhabha 36). Since it is this process of confrontation in enunciating subject

⁶² This notion of an England that lies beneath or behind the one that everyone sees as reality emerges in several other contemporary British novels, including Will Self's *How the Dead Live* (2000), Neil Gaiman's *Neverwhere* (1996) and Susanna Clark's *Jonathan Strange and Mr. Norrell* (2004). In each case, the alternate England contains inexplicable or magical elements that would disrupt the worldview of the characters inhabiting the visible England of the story.

positions that creates the Third Space, a similar kind of space might open in the clash between the magical and realist elements of the text. The cultural differences that give rise to the Third Space might also be expressed through the narrative differences between the supernatural and the real that are the essence of magical realist narratives.

In Saladin's efforts to reconcile the unnatural transformation he has undergone and his previous life, he seeks to understand the nature of this transformation. In response to the choice Sufyan presents, Saladin replies, "either I accept Lucretius and conclude that some demonic and irreversible mutation is taking place in my inmost depths, or I go with Ovid and concede that everything now emerging is no more than a manifestation of what was already there" (285-6). Saladin chooses Lucretius, rationalizing that "a being going through life can become so other to himself as to *be another*, discrete, severed from history" (297). Despite accepting this reason for his transformation, Saladin still finds his transformation distressing:

I am the incarnation of evil, he thought. He had to face it. However it had happened, it could not be denied. I am *no longer myself*, or not only. I am the embodiment of wrong, of what-we-hate, of sin. Why? Why me? What evil had he done – what vile thing could he, would he do?... Was it his fault that Pamela and he were childless? Were genetics his responsibility? (265)

With this return to his reproductive failures, a Darwinian rationale for his extreme transformation presents itself, suggesting that his transformation will perform a similar function as fathering children in that it may foster a legacy of empowerment for those very people Saladin had rejected as not "his kind."

While the novel ultimately remains vague regarding the purpose of his transformation or even whether he is turning into "some sort of science-fiction or horror-video *mutey*, some

random mutation shortly to be naturally selected out of existence, - or whether he was evolving into an avatar of the Master of hell” (291), his transformation has effects that reach beyond personal ones. His transformation destroys his image of himself as a British man; so he decides instead he “would be what he had become: loud, stenchy, hideous, outsize, grotesque, inhuman, powerful. He had the sense of being able to stretch out a little finger and topple church spires with the force growing in him, the anger, the anger, the anger. *Powers*” (298). His transformation, regardless of how personally distressing, benefits the community, “his kind” who he had always rejected. Rumors of his existence at the Shaandaar bed and breakfast spread so that he becomes a bogeyman for the police, and a symbol of power for young Blacks and Asians that gives rise to a “devil-cult” that reclaims the devil as a heroic figure (295-6). Mishal Sufyan tells him “you’re a hero. I mean, people can really identify with you. It’s an image white society has rejected for so long that we can really take it, you know, occupy it, inhabit it, reclaim it and make it our own. It’s time you considered action” (296). Action certainly happens in the form of racial strife after a member of the Brickhall community dies mysteriously in police custody. Although Saladin’s devilish transformation inspires the community to appropriate his devilish image, the actual racial violence that follows is less magical than the metamorphosis. As one of the characters, Jumpy Joshi, notes, “what has happened here in Brickhall tonight is a socio-political phenomenon. Let’s not fall into the trap of some damn mysticism. We’re talking about history: an event in the history of Britain. About the process of change” (484). For Joshi, not all change is magical; sometimes it is just the progress of history. One suspects that for the author, or at least the narrator, sometimes the progress of history requires such magical or mystical events to propel it forward, just as the evolutionary theory of punctuated equilibrium requires violent and sudden change to propel it forward. The transformation of humans into posthumans

that other texts in this project discuss might also be imagined as a progress of history (or even in some cases, as with Ishiguro's clones, a regression into a historical past that includes slavery).

Despite the positive effect of Saladin's anger in uniting the community, his anger, once he embraces it and his new identity, returns Saladin to his former life. After a cyclonic and violent feeling of pain, Saladin Chamcha was "apparently restored to his old shape, mother-naked but of entirely human aspect and proportions, *humanized* – is there any option but to conclude? – by the fearsome concentration of his hate" (304). Of course, as with the immigrant experience, one can never go back. Although Saladin's restoration to his normal human form allows him to re-enter his old life, he realizes that the experience has altered him in ways that will forever mark him: "A new, dark world had opened up for him (or: within him) when he fell from the sky; no matter how assiduously he attempted to re-create his old existence, this was, he now saw a fact that could not be unmade" (433). The residuum of that anger leads Saladin to destroy many of the relationships he formerly cherished, and, as much as he might have resisted it, to identify more closely with "his people" in Brickhall. Eventually of course, Saladin is forgiven by the people who he has hurt as a result of this new darkness inside of him, and "in spite of all his wrong-doing, weakness, guilt – in spite of his humanity – he was getting another chance" (561). Within Saladin Chamcha, there exists both good and evil; what Saladin's transformation demonstrates is that combination can remain stable. The essence of the human remains at least to some extent consistent regardless of external appearance, even if one is metamorphosed into an incarnation of the devil himself.

The Production of Posthuman Knowledge in *Grimus*

In *Grimus*, bodies are marked as different – included or excluded from the communities of the novel – but are complicated by the underlying feature of those character’s bodies – their immortality.⁶³ In *Grimus*, immortal bodies can be scientific or magical: some of the immortals of Calf Island think their existence is magical, requiring a denial of the agent and cause of their continued existence, while for others, their immortality is understood to come about through the deployment of an alien technology. In *Grimus*, we see how a merging of scientific and magical ideas conflates the two to reveal their underlying, shared access to knowledge and its effect on human consciousness. The narrative presents consciousness as something that is not necessarily individual, an unusual idea for humans, but in the visions of “brains in vats” of science fictional representations of posthumans, consciousness is often imagined to be fluid, not tied to a particular body. In *Grimus*, Flapping Eagle, the protagonist of the novel, finds his consciousness shared first temporarily with Virgil Jones, then permanently with Grimus so that “(I was Flapping Eagle.) (I was Grimus.) Self. My self. Myself and he alone.... Yes, it was like that. Printing. Like printing. Press, his thoughts pressed over mine, under mine, through and into mine, his thoughts mine” (305-6). This merging of bodies and minds is possible because of the “Conceptual Technology” of the Stone Rose and the knowledge Grimus, Virgil, and eventually Flapping Eagle gain in using that technology to access other dimensions within the universe of quantum physics. In the novel, magic and technology become two sides of the same coin, and

⁶³ These immortal characters echo the desires of members of posthuman or transhumanist groups, who often claim life extension as the goal of their endeavors. See for example “The Transhumanist Declaration” World Transhumanist Association; or “Principles of Extropy Version 3.11” Extropy Institute. Brian Alexander’s history of transhumanism in *Rapture* also describes life extension (with its associated emphasis on disease management) as the original and still primary goal of transhumanists like Craig Venter or Ray Kurzweil.

which explanation the characters choose depends on their original position in relation to the center of that magical or technological power.

Grimus is narrated by Flapping Eagle, an Axona Indian of the American west who is forced to leave his home because he does not fit into the community. He obtains an immortality elixir from his sister, Bird-Dog, who has left with the mysterious peddler Sispy, so that Flapping Eagle spends much of the novel seeking him. During his long quest, he meets Deggle (who turns out to be Sispy) and Deggle sends him to Calf Island, a refuge for immortals like himself who have grown tired of living among mortals. Flapping Eagle is convinced his sister is on the island. He meets Virgil Jones, a loner alienated from other inhabitants who helps him navigate the island. He also meets Ignatius Gribb, the island's intellectual who denies the existence of Grimus and the Stone Rose. Flapping Eagle does eventually find his sister on the island, but she is not the person he remembers from his childhood. He is only able to reach her after struggling up the island's mountain and through the Grimus Effect, a by-product of a technology called the Stone Rose. The nature of the Grimus Effect is ambiguous: it is either magical or the product of a highly advanced technology, though regardless of which better explains its nature, it is an object that Grimus uses to control the inhabitants of the island.

The Grimus Effect is a weakening of the boundaries between reality and the Inner and Outer Dimensions: the Outer Dimensions are other worlds that one can travel to using the Stone Rose, while the Inner Dimensions are a concrete manifestation of the internal psyche of the individual. Travel to the Outer Dimensions suggests space or time travel, which suggests the Stone Rose is a technology; however, the Inner Dimensions suggest that there is also a mystical or magical dimension to the Rose. When Flapping Eagle finds his sister and Grimus at the top of the mountain, he is tricked by Grimus into merging their consciousnesses into one body as we

saw earlier. But by the end of the novel, Flapping Eagle has destroyed the Stone Rose and unmakes Calf Island as a result. As such a brief description of a complex text demonstrates, the merging of magic, technology, consciousness, alternate worlds and inner dimensions confuses the boundary between the real and the fantastic in provocative ways. The Stone Rose is a technology – one might even claim it is a posthuman technology – but it is also magical in the way it operates, Calf Island inhabitants' response to it, and in the Grimus Effect it creates.

In addition to confusion about the nature of the Stone Rose, the genre to which *Grimus* belongs is ambiguous. It contains elements of science fiction – extraterrestrial frog-like aliens made of stone, an object that transports people across dimensions, and the goal of many seeking a posthuman existence: immortality. It also contains elements of magical realism – a pair of magical elixirs that grant life and death, a woman (Virgil's wife Liv), whose love-making opens a portal across dimensions, and a dance (that Virgil dances), that is capable of drawing a man out of an unconscious state. In this text, the two are intimately interconnected: whether the novel is science fiction, magical realism, or a fantasy, the presence of elements that might be read as technologically advanced or as magical performs a similar function, that is, they represent the operation of power. Flapping Eagles expresses it well in the novel:

Now that I am so much older, I am not at all sure what the word *magician* means. To Joe-Sue that day [Flapping Eagle's birth name], born and raised as he was in a tribe where magic intermingled continually with daily life, it meant anyone apparently in possession of power, or knowledge, which he himself lacked. Perhaps that's the only sense in which the word has meaning. (20)

Flapping Eagle's equation of knowledge and power suggests that not only magicians, but scientists hold power over others because of the knowledge they possess. A similar effect occurs

at the level of narrative itself as this novel balances between the generic techniques and conventions of science fiction and magical realism.

Describing the difference between science fiction and magical realism, Rawdon Wilson tells a parable of two brothers who tired of their “commonplace existence and began to reinvent the world” (210). The first brother proposed that, “all these mundane assumptions about human experience could be overturned and strange, but profoundly exciting propositions would follow. New worlds would emerge.” This brother “began by assuming a single proposition that was contrary to reason and to the likelihoods of human life.... The propositions that he invented were often antirational and not at all intuitive, like the axioms of differential geometry. Still, he was able to draw from them fascinating consequences” (211). The second brother “began to suppose that all human experience could be counterfactual.... In the second brother’s narratives there were no single axioms from which everything descended, or from which the world hung, but there were instead two codes that were interwound,” one of which organized events normally while the other allowed for any number of strange things that could happen, so that “in the second brother’s imagined narratives, the possibilities of the two worlds were always copresent, their codes lovingly interwound, and clung fiercely to each other” (212). The first brother’s storytelling mode describes fantasy and science fiction, while the second describes the operational parameters of magical realism.

Wilson also describes the fictional world of realism as that “in which all the deictics and descriptions operate as if they were being used in the extratextual world and which, thus, constantly beg comparison with that world”; fantasy or science fiction as genres “in which all indications of distance, capacity, or arrangement are generated in accordance with self-contained assumptions, gamelike rules that are experienced as axioms”; and, magical realism as that “in

which the indications of local place are sometimes those of the extratextual world but at other times are those of another place, very different in its assumptions” (217). Thus magical realism and science fiction both “beg comparison” with the extratextual world in portions of their narrative, while they also deviate from that extratextual world in significant ways that cannot be incorporated into that extratextual world except as extrapolation (science fiction) or disruptive fantasy, dream, or allegory within an otherwise realist text.

As one of the men with knowledge, Grimus is a character who bends the “gamelike rules” of the science fictional elements of the text by hiding the knowledge of just what the Stone Rose is from the other characters within the text. For that matter, Rushdie also manipulates our understanding of the narrative as readers by failing to explain the axioms on which the narrative is built until the end of the tale (and even then, one might argue that those axioms are vague at best). In describing the text as magical realist, I am relying upon the reader’s sense that many of the events of the narrative are magical or inexplicable interruptions of an otherwise realist text because the axioms underlying them are not described. At the beginning of the narrative, Flapping Eagle’s immortality and transportation to the island are fantastical disruptions of an otherwise realist narrative (the Axona settlement on a tabletop in the southwestern United States correlates with the extratextual world). Even the Calf Island residents’ superstitious beliefs about Grimus and denial of his existence are fantastical. It is only later when the alien Gorf and the Stone Rose are introduced that we understand the inexplicable as potentially arising from extraterrestrial interference and technology, shifting the narrative into a science fictional mode. Thus for the reader, Grimus, as the man with the power over the Stone Rose, moves between magician and technologist.

Rushdie's conflation of magician and scientist (or technologist) is not unique in literature, however. In *New Maps of Hell: A Survey of Science Fiction*, Kingsley Amis suggests that Shakespeare's *The Tempest* is a science fiction text because "one of the things it is about is specialised knowledge, and whatever may be the relation currently devised between Jacobean science and magic, it would be safe to say that contemporary attitudes towards what we now see as two things were partly inseparable" (29-30). Further, "even if one resists the temptation to designate Caliban as an early mutant – 'a freckled whelp,' you remember, 'not gifted with a human shape,' but human in most other ways - and Ariel as an anthropomorphised mobile scanner, Prospero's attitude to them, and indeed his entire role as an adept, seems to some degree experimental as well as simply thaumaturgical" (30). The notion that Prospero is a technologist echoes our sense as readers that Grimus is also a technologist because to those who do not know the source of his power, it seems as magical as Prospero's control over his island and its elements. It is interesting to note that Amis's description of Caliban as 'not gifted with a human shape' yet with human desires and language also resembles Saladin's transformation in *The Satanic Verses* into a human with an inhuman shape. Caliban's human desires contained within a shape that is not human also suggests that he might represent the radical posthumans that we will encounter in subsequent chapters, whose physical appearance radically diverges from the naturalized human. Here, human emotion, thought and desire, and external appearance get written on the body and we can see the connection between the nonhuman bodies of science fiction (including posthuman bodies) and the displaced immigrant (like Saladin).

In considering Caliban as an early mutant (perhaps even a product of Prospero's own manipulation of biological material), we can understand how the frustration of the mutant – Saladin or Caliban – might express itself as a rebellion. Wendy Faris connects Caliban's use of

language from a postcolonial position with magical realism, declaring that “just as Caliban's swear words are not the combinations of sounds Prospero intended for him to use, so magical realism's use of realistic detail to describe an impossible event, which moves us beyond everyday realist, rather than anchoring us in it, was not realism's original program” (28). Faris connects language and postcolonial experience at the level of the genre, but we might also suggest that the transformation of the body, either regressively as a monster, or progressively as a posthuman is a similar disruption of realist narratives.

Magic, Science, Technology and the Stone Rose

Magic and technology are both ways of knowing the world and controlling it. Magic identifies what is sacred through ritual and symbol, while technological information is contained within technological tools such as machines (or cyborgs and clones). In his study *Technology as Magic*, Richard Stivers suggests that magic, including “the sacred, symbol, myth and ritual, comprise[s] a cultural configuration that represents the deepest and most profound structure of any culture” (29). Also, within culture, “technology uses its information as a logical procedure embedded in a tool or machine to realize a specific goal” (9). The two modes of understanding the world, magic and technology, originate in different beliefs and practices but have a similar effect:

technology employs scientific information in the service of a material technique that acts upon the physical world, but magic uses information that is symbolic to influence nature or human beings. Magic establishes an indirect or symbolic relationship between a set of practices and a desired outcome so that the magical practices become, as it were, operational indicators of the outcome. (11)

Stivers's claim suggests that since magic and technology are both systems of knowledge, both are forms of power, even if that power explains the world in significantly different ways. A model that accepts that magical events are equally valid descriptors of human experience as the realist ones suggests these categories may be fluid.

In *Grimus*, the mystical nature of the Stone Rose is also complicated by its construction as both a religious and a scientific object. During Flapping Eagle's ascent of Calf mountain, he is assisted by Virgil Jones, a companion and ultimately Flapping Eagle's savior. As the two men travel up the mountain, they encounter the Grimus Effect, a by-product of the Stone Rose, that drives Flapping-Eagle deep into his subconscious where he must battle his inner demons in order to return to consciousness and continue up the mountain. When Virgil realizes that Flapping Eagle is losing the battle and needs help, he dances the mysterious Strong- and Weak- dance in order to enter Flapping Eagle's subconscious and save Flapping Eagle from being lost forever in the trance-like state of the Inner Dimensions brought on by the Grimus Effect. In *Stranger Gods*, Roger Clark suggests that in constructing Virgil's dance, Rushdie is "borrowing from the theory and practice of the Sufi brotherhoods" commonly referred to as Whirling Dervishes, who dance as an expression of their devotion (47). However, the description of the Strong- and Weak-dance that Virgil learned when he traveled via the Stone Rose to the Spiral Dancer planet also sounds like the strong and weak nuclear forces of quantum physics. In *Grimus*, the Spiral Dance is described as "a harmony of the infinitesimal, where energy and matter move like fluids." The point at which energy forces come together is the Strongdance; when they fall "back into the Primal, they were dancing the Weakdance" (Rushdie 92). In quantum physics, the strong nuclear force holds the (infinitesimal) proton and neutron together in the atom, while the weak nuclear force is radioactivity, the breakdown of the nucleus through loss of ionizing particles (Hawking

71-2). Further confusing categories of knowledge, Virgil performs the dance in order to enter the Inner Dimensions, a space in which Flapping Eagle's inner desires, fears ("monsters") and imagination create a landscape that he must physically escape. They are "his own devils burning in his own inner fires. His own worms gnawing at his strength" and if he cannot overcome these obstacles "then he dies. Or lives on, a working body encasing a ruined mind" (Rushdie *Grimus* 103). Thus Virgil uses a mystical dance to harness the force of quantum physics to rescue Flapping Eagle from the psychological terrors of his own id, a discipline-crossing episode that demonstrates the ways in which categories of science, human understanding and mysticism overlap in this text.

The Spiral dance can be viewed as a narrative analogy for the indeterminacy of magical realist categories discussed above. Rushdie submitted *Grimus* to the Gollancz science fiction contest; however, its genre-bending nature meant it was not considered for the prize, because as Roger Clark suggests "while the novel contains intergalactic journeys and a race of extraterrestrial stone frogs, the characters have heavy mythological and mystical associations, the setting is a strange fusion of four cosmographies, and the structure derives mainly from a Sufi mystical journey" (13). While it may not be important in the final analysis to be able to discern which parts of the novel might be labeled as science fiction, and which magical realism, myth, or just plain fantasy, what this observation suggests in its conflation of myth, mysticism, and extraterrestrials is that these unreal elements serve a function within the text that we might examine from the perspective of the posthuman. If we consider the posthuman to be a human that is nonetheless different from ourselves, then the immortal humans on Calf Island might be considered posthumans and their experience of their posthuman existence provides us with some idea of what it might be like to indeed be posthuman ourselves.

The mere fact that all the inhabitants of Calf Island are immortal lends a sense of the mystical or fantastical to the whole narrative. One of those immortals, Virgil Jones, suggests to Flapping Eagle that his acceptance of immortality is supernatural or sorcery (61). Attaining immortality through drinking of a potion does indeed seem fantastical, but later in the novel we learn of the extra-terrestrial origins of the liquid, which introduces the possibility that the elixir is simply the product of a pharmacology much more advanced than our own rather than a magical elixir. The ambiguity about the nature of the potion reveals how Arthur C. Clarke's declaration that "any sufficiently advanced technology is indistinguishable from magic" (21) might allow magic and science to operate simultaneously within a text.

Virgil explains his own understanding of the magic and science of the things he has witnessed as an immortal, as a matter of perception. He explains that Flapping Eagle perceives him as a solid even though the space between the atoms in his body is no less than the space between those in the air that fills an empty well-shaft, in spite of the fact that his body appears solid while the air appears empty. Virgil's eloquent and extensive explication of his theory suggests an organizing principle for the narrative itself:

What I am driving at ... in my rather indirect fashion, is that the limitations we place upon the world are imposed by ourselves rather than the world. And, should we meet things which do not conform to our structure of reality, we place them outside it. Ghosts. Unidentified flying objects. Visions. We suspect the sanity of those who claim to see or sense them. An interesting point: a man is sane only to the extent that he subscribes to a previously-agreed construction of reality.... Is it not a conceptual possibility that here, in our midst, permeating all of us and all that surrounds us, is a completely other world, composed of different kinds of solids, different kinds of empty spaces, with different

perceptual tools which make us as non-existent to its inhabitants as they are to ours? In a word, another dimension... In fact, that an infinity of dimensions might exist. (61-2)

In Virgil's speech, we find an example of the curious blend of science, technology, mysticism and existential philosophy that comprise this novel. But within this speech, we also glimpse the overall point of the narrative – that much of what we perceive as real or true, whether applied to genre, or knowledge, or experience – is all a matter of perspective. In Virgil's explanation of perspective, Rushdie seems to be suggesting that the way we describe something depends less on its character and more on our perspective so that the difference between magical events (including transformations) and scientifically or technologically-based ones might just depend on our perspective.

While the reader might at first think Virgil's argument for different dimensions simply a mental exercise, a few pages later, the reader finds that there is a Gorf from the Endimion containing the planet Thera living on Calf Island (77). With the revelation that aliens inhabit the island, Virgil's suggestion of different dimensions becomes realized within the rock body of the Gorf and the novel shifts from a mystical (or magical) mode to a science fictional one. The Gorf's delight in puzzles and anagrams are the reason it has left its home planet Thera to observe the inhabitants of Calf Island, and the Gorfs are alien enough that they are able, simply by thinking, to rearrange the reality of their dimension in order to organize it into the ultimate order.

The science fictional themes of the novel continue as Virgil and Flapping Eagle travel up the mountain at the center of Calf Island where they come under the influence of the Grimus Effect, a paralyzing hypnotic state that converts the fears of the subconscious into physical manifestations. The people who live in the town of K in the midst of the Grimus Effect are only able to keep it at bay by being single-minded, "to a fault," as Virgil tells Flapping Eagle (99).

The single-mindedness of the resident philosopher, Ignatius Gribb, leads him to declare “obsession is the path to self-realization” (200) and that Grimus doesn’t exist “nor do[es] his precious machine, nor his supposed dimensions, nor any of it. It’s all the babbling of an idiot like Jones: sound and fury, signifying nothing” (163). Virgil Jones himself thinks little of Gribb’s ideas, warning Flapping Eagle that “[Gribb] used to say: - there are no human beings alive. What we all are is Shells, and hovering around in the ether are what he called Forms. Things like emotions, reason and so forth. They occupy one of us for a while, then another one moves in.” He admits, “it’s pretty in its fashion. Explains the illogicality of some human actions. Shifts of character and so forth” but ultimately, Virgil chooses to reject Gribb’s view because it discounts personal agency as cause for those actions (87). Between Virgil Jones’s ability to enter Flapping Eagle’s psyche to help guide him through the hazards of the Inner Dimensions, and Gribb’s conviction that the markers of human consciousness – “emotions, reasons and so forth” – are simply Forms hovering in the ether surrounding us, an Enlightenment valuing of the individual rational mind as a marker of the human is denied. *Grimus* suggests that in the presence of the Stone Rose and the Grimus Effect that it produces, the human mind is nothing more than an artifact, a side-effect of a technological event that can be as easily corrupted and manipulated as the matter of which the body is made. Virgil does reject Gribb’s notion of Forms and Shells, saying that the dimensions show that “the one thing that stays constant in the shifts between the dimensions is one’s own consciousness” (ibid.). However, the immortality of the occupants of the island has led them to overlook the role of the body in the creation of that consciousness or their humanity.

Gribb’s philosophy and the Grimus Effect not only stand the Cartesian mind/body dualism on its head, but are also founded on rejecting technology. Gribb tells Flapping Eagle:

The one aspect of K I love above all else is the absence of scientists. I always found it shameful that mere technologists should have arrogated to themselves the right to be called that, scientists, men of knowledge. In their absence, science is returned to its true guardians; scholars, thinkers, abstract theoreticians like myself. However, the absence of the technocrat does not mean a relapse into superstition, my dear Flapping Eagle; on the contrary, it places upon us an even greater duty to be rational. The world is as we see it, you know; no more, no less. (162)

Gribb's equation of the scientist with the "mere technologist" might raise some objections among scientists, but his speech demonstrates how the abstract nature of scientific theory does not differ significantly from Gribb's philosophical theory. When we consider the object of Gribb's study, the similarity between Gribb's abstract theorizing and science's pursuit of knowledge becomes even clearer, while we see how the narrative and the mythical nature of Grimus's technology become intertwined with the Effect that the inhabitants of K experience. Gribb tells Flapping Eagle:

Many years ago, he said, I became engrossed in the notion of race-memory: the sediment of highly-concentrated knowledge that passes down the ages, constantly being added to and subtracted from. It struck me that the source-material of this body of knowledge must be the stuff itself of philosophy. In a word, sir, I have achieved the ultimate harmony: the combination of the most profound thoughts of the race, tested by time, and the cadences that give those thoughts coherence and, even more important, popularity. I am taking the intellect back to the people. (160)

Gribb's theory of race memory reminds us of the importance of bodies, since the notion of race itself is tied to the body, so that 'race-memory' is tied to the mind that arises from that body

(similar to how Henry Perowne imagines the relationship between mind and body). However, on Calf Island, the presence of space travel to other dimensions that the Stone Rose affords, and the fluidity of consciousness that we witness in Virgil's ability to enter Flapping Eagle's mind (or the merging of Flapping-Eagle-Grimus), suggest that consciousness is both stable and able to exist independent of the human body. What we do see in Gribb's description is the role knowledge plays in the production both of myth and in Gribb's abstract theorizing of it.

Knowledge becomes an important feature of both the magical and the technological elements in *Grimus*. The reader's knowledge of the world in which the narrative takes place is built gradually and the environment the characters experience is created by thought itself. It is only after being introduced to the Grimus Effect, with its mysterious influence over the subconscious, and Calf Island itself, full of immortals that have drunk a liquid provided them by Grimus, that we learn of their origins. As Virgil and Flapping Eagle ascend Calf Mountain to challenge Grimus for control of the Stone Rose, they meet Virgil's estranged wife, Liv, who reads the story of the Stone Rose's discovery to Flapping Eagle from Virgil's diary.

Virgil and Deggle find a Stone Rose in the woods by a cemetery but when they touch it, they faint. They drag the Rose home, and when their friend Grimus touches it, he does not faint, but disappears. On return he tells them he traveled to Thera and encountered the Gorfs; he also returns with the two liquids that grant eternal life and eternal death (263). After drinking the liquid that grants eternal life, they decide to distribute the immortality liquid to a select group of other people, and prepare a place of refuge where those immortals "who tire of the world but not of life may come" (264). Virgil and Grimus disagree however on the nature of this refuge – Calf Island. In his diary, Virgil writes "we have been building a world. Impossible to say whether we *found* the island or *made* it. I incline to the latter, Grimus to the former. He holds that Conceptual

Technology merely reveals existences which mirror your concepts” (265). The argument suggests that either the Concept is created wholly new, or the Concept simply reveals a pre-existing form. In this construction, we hear echoes of Saladin’s choice between the Ovidian and the Lucretian theories of metamorphosis mentioned earlier.

This Conceptual Technology, the Stone Rose, is so mysterious that its status as a technology is questionable. If it is a technology, it certainly is alien. The Stone Rose conforms to what we think of as technology in the whine that develops after it is damaged by Deggle (270) and its ability to transport its users to other dimensions – Virgil describes how there had been “voyages to the real, physical alternative space-time continua” (91). But the Stone Rose is also mysterious. Virgil describes how he doubts whether the force of Grimus’s will can hold the island together (267). He also states: “I have always thought of the uses of the Rose as rites. They are so very unmechanical” and “the Rose can heal as well as hurt. I am more scared of it than I ever was” (270-1). Although technologies often evoke fear, they are rarely described in ritualistic terms, so if the Stone Rose is a technology, it is used in magical or mystical ways.

Given the ability of the Stone Rose to facilitate travel between different dimensions of the universe, Grimus’s possession and control of it makes him a kind of posthuman in that he is not limited to the reality (or the dimension) into which he was born. If Grimus’s possession of the Stone Rose is not enough to make him a posthuman, his alienation from the other occupants of the island might make him at least differently human than they. Flapping Eagle identifies this alienation when he tells Grimus: “the Stone Rose has warped you, Grimus; its knowledge has made you as twisted, as eaten away by power-lust, as its effect has stunted and deformed the lives of the people you brought here” (297). The Stone Rose as an Object of Conceptual Technology has warped Grimus because it is not a human technology – the alien Gorf created the

Stone Rose to satisfy its own desires to play games with Grimus and the other inhabitants of the island.

The technology of the Stone Rose suggests the novel might be science fiction, and the quest narrative in Flapping Eagle's search for his sister reinforces this sense. At first, he seeks his sister Bird-Dog and accepts immortality in order to have the time necessary for the search, but after centuries of searching, he despairs of finding her and changes his quest to a search for the means to become mortal again. It is this second quest that brings him to Calf Island, where Virgil expresses surprise at Flapping Eagle's desire to die and "return to the human race" because Virgil thinks it is interesting "that you should think of death as such a humanizing force" (66). In his search for mortality, Flapping Eagle finds his sister, and actually dies, but it is only a partial death because his consciousness merges with Grimus's to form a hybrid entity (305). Grimus uses the Subsumer, another Conceptual Technology of the Stone Rose in order to subsume Flapping Eagle's consciousness within his own, so that they occupy one body. Oddly, the merging of consciousnesses is described in reproductive terms:

My son. The mind of Grimus rushing to me. You are my son, I give you my life. *I have become you, I have become you are me.* The mind of Grimus rushing through. The mandarin monk released into me in an orgasm of thinking.... Like a beating of wings his self flying in. *My son, my son, what father fathered a son like this, as I do in my sterility.* (306).

This hybrid creature transcends the limitations of Flapping Eagle or Grimus alone, suggesting that posthuman hybridity, instead of being a dilution of identity, creates a more powerful mastery of the multiple dimensions of human nature than is possible in a single human, even an immortal

one. Flapping-Eagle-Grimus is finally strong enough, and knowledgeable enough, to manage the power of the technology and correct the ills created by the Stone Rose.

As a hybrid of the humanity-searching Flapping Eagle, and the interdimensional-traveling posthuman Grimus, he is able to create a dimension in which the Stone Rose no longer exists to cause trouble. As Flapping-Eagle-Grimus learns from the Gorfes, “*We are extremely perturbed about Grimus' misuse of the Rose. It was never intended to be a tool for intra-endimions travel. Nor a magic box for the production of food. It is a flagrant distortion of Conceptual Technology to use the Rose to Conceptualize a packet of (he searched for the right form) coffee*” (309). Using the very technology of the Stone Rose – Conceptualization – Flapping Eagle conceptualizes a place without the Stone Rose. Although at the end of the novel it appears this new Calf Island is slowly dissolving into the energy that created it, the island is being returned to the humans that inhabit it, correcting the unnatural experience of immortality provided by an alien species.

Rushdie’s two novels, *Grimus* and *The Satanic Verses* present us with worlds that do not conform to the strictly rationalist view of someone like Henry Perowne because they employ the indeterminacy of magical realist literary techniques. But in the transformations that take place in both texts, and particularly in the use of technology as a means of transformation in *Grimus*, we are forced to reconcile the transformative nature of the immigrant experience with the transformative technologies of the posthuman, revealing that both fiction and technology are able to function as alienating forces, revealing for us their role in constructing human identity.

CHAPTER 4 Science Fictional Representations of the Posthuman

As modes of science fiction have more and more become the new realism of technological society, the world itself has grown science fictional. The scientific, technological, and industrial developments of the nineteenth century that made the rise of science fiction possible have inexorably led to twentieth-century conditions in which manifestations of science fiction have become inevitable and inescapable.

Brooks Landon *Science Fiction after 1900*

In a world grown increasingly “science fictional,” the relationship between the two terms, science and fiction, becomes important for understanding how science and fiction operate in the world. According to Brooks Landon, an increasingly “science fictional” world begins to blur the boundaries between fiction and scientific reality as well as between realist and speculative genres of literature like science fiction. When the real world begins to look more and more fantastical, the storyworlds of fantastical texts begin to look more and more like everyday reality (7-8). Conversely, as the world grows more science fictional, the elements of a science fiction text that do not directly correlate with the extratextual world, diminish.

To suggest that the world has indeed become science fictional in nature requires one to detect continuity between literature and the world. This continuity relies upon a recognition that the fantastical characters in literature (including science fiction) differ from people we meet in everyday life in degree more so than in kind. The posthuman as it has been discussed to this point in this study mostly differs from the human in degree, that is, the posthuman is understood

to be co-extensive with the human, different in exhibiting more or less of a quality, but still human in a fundamental way. The posthuman can also be imagined to differ in kind from the human, to be different from the human in some ways that suggest that the posthuman is in some fundamental way different from the human.

A reading of the posthuman characters in the two novels under study in this chapter, Amitav Ghosh's *The Calcutta Chromosome* (1995) and Ken MacLeod's *The Stone Canal* (1996), allows us to compare posthumans that differ in degree from those that differ in kind. What the chapter will show is that regardless of the difference, both types of posthumans pose the same question: namely, what is the relationship between the mind and body and human consciousness?

Both novels treat the body as an artifact or object. In particular, Ghosh's novel challenges connections between the body and human consciousness, while MacLeod's questions the connection between body and mind in the context of the antinomy of the organic versus the mechanical. In both novels, human identity is located in consciousness, while the body and mind that houses that consciousness are imagined to some extent as a container, or a means of identifying that consciousness. In MacLeod's novel in particular, the body becomes a kind of status symbol, so that having the right body is necessary in order to be considered a full member of society. In the "science fictional" thinking of these novels, the oppositions identified as characterizing literature of the posthuman: the organic and the mechanical, the body and consciousness, and cosmopolitan identity as opposed to genetic determinism, come into clearer focus in the extreme differences between the posthumans and humans represented within them.

The *Calcutta Chromosome* is an alternate history novel, while Ken MacLeod's *The Stone Canal* is a more typically spaced-based science fiction narrative. These two novels have also

been chosen for the study because of the kinds of posthumans they present, and because they represent two very different strands or traditions within science fiction. Within the genre, *The Calcutta Chromosome* represents a “soft” science fiction approach to the topic while *The Stone Canal* represents “hard” science fiction.⁶⁴ Both the “soft” science fiction of Ghosh’s alternative history and the “hard” science fiction of MacLeod’s space-faring, body-modifying New Martians envision how the division between mind/body and consciousness might be understood in a posthuman context. Following Landon’s notion that the world is increasingly “science-fictional,” the analysis of these two very different texts will explore how a difference in kind affects the representation of the posthuman in these novels.

Although *The Calcutta Chromosome* and *The Stone Canal* construct the posthuman in different ways, each asks a fairly straightforward if complex question: in what ways do the posthuman bodies of the characters affect their relationships with others, with their societies, and even their own subjectivity? The difference between the bodies of these characters and “natural” human bodies demonstrates how our attitudes about our own bodies and subjectivities are contingent on their social and corporeal construction. It is the cultural assumptions about the relationship between body and mind and human identity that *The Calcutta Chromosome* and *The Stone Canal* challenge.

⁶⁴ During its development in the twentieth century, science fiction branched into what became commonly known as “hard” and “soft” versions of the genre. Science fiction of the early and mid-century, particularly as it developed in the American pulp magazines of the 1940s and 1950s tended to focus on the conquest of space and technological developments in physics and chemistry. In the 1960s and 1970s, writers of the New Wave and feminist writers of science fiction began to include the techniques and terminology of the social sciences, such as psychology and sociology, in their science fiction narratives. These narratives were generally labeled “soft” science fiction to distinguish them from more traditional forms. Thus “hard” science fiction is based in the physical sciences while “soft” science fiction is based on the social sciences. “Hard” science fiction is the kind of writing that is most frequently associated with the label “science fiction” though at the end of the twentieth century, an increasing blurring of genre boundaries between science fiction and fantasy, and between science fiction and mainstream fiction, has made the binary of hard vs. soft science fiction seem artificial. For more on the development of the genre and classification, see Marleen S. Barr’s “Introduction: Textism - An Emancipation Proclamation,” Paul Kincaid’s *What it is We Do When We Read Science Fiction*, Gary K. Wolfe’s “Evaporating Genre: Strategies of Dissolution in the Postmodern Fantastic,” or Frank McConnell’s *The Science of Fiction and the Fiction of Science*.

Landon's science-fictional thinking "has clearly overflowed the formal bounds of literary genre to sustain both an identifiable science fiction subculture and a broad complex of science fiction-shaped cultural assumptions about science, technology, and the future" (xiii). Accepting Landon's proposition means the boundaries between science fiction and realist prose, and those between fiction and scientific writing, also start to blur. Susan Squier has noted the mutual rhetoric shared by science writing and fiction, suggesting that because literature and science are "the two preeminent technologies that the Enlightenment produced for constituting social subjects and objects of knowledge" (28), the practices of both science and literature are able to produce tangible social results (30). On the side of literature, Patricia Melzer argues that science fiction is defined primarily by its mode, its narrative devices, and its themes, which highlight the functional nature of these systems.⁶⁵ This means that the science fictional narrative device of estrangement confronts normative systems so that the spatial displacement – the storyworld of the text – "create[s] the freedom to voice assumptions otherwise restricted by a realist narrative frame, and the geographic displacement of identity formations" (1-2). In its capacity to challenge

⁶⁵ Science fiction's relationship to ideas and science is revealed in many of the definitions of the genre provided by its practitioners. Tzvetan Todorov rejects the dualism that opposes verisimilitude and the fantastical as a case of literature becoming "no more than a means of expressing philosophical categories" (16) so that "the themes of fantastic literature [including science fiction] have become, literally, the very themes of the psychological investigations of the last fifty years" (161). Margaret Atwood identifies science fiction as simply a change in terminology from the scientific romance of the late nineteenth century (e.g. H.G. Wells), and that science fiction is a strategy employed within other fictions ("Aliens Have Taken the Place of Angels"). Darko Suvin, in *Positions and Presuppositions in Science Fiction* (1988) identifies science fiction as a text which combines storytelling with novelty, whose combination produces a cognitive estrangement in the reader (71-3). Philip K. Dick describes this novelty as a "distinct new idea" within an otherwise realistic world that the reader can recognize, which causes a sense of *dysrecognition* in the reader (99). This idea must be intellectually stimulating, offering the reader possibilities previously not thought of. The effect of Dick's *dysrecognition*, or Suvin's *cognitive estrangement*, is described by Catherine Ramirez as "enabl[ing] us to identify and question overarching, yet seemingly invisible, social systems and regulatory ideals, such as capitalism, patriarchy, heterosexuality, sex, gender, man, and woman. Moreover, dysrecognition and estrangement allow us to imagine epistemological and ontological alternatives" (qtd in Melzer 378). The definition of the human is one other social system or regulatory ideal available to the questioning of science fiction.

cultural norms and assumptions, science fiction acts as both literary mode and genre.⁶⁶ The fantastical nature of science fiction can offer a picture of how posthuman technologies might affect our understanding of ourselves as human beings.

Science fiction puts a human face on technological innovations, allowing readers to see themselves in the characters who must contend with these technologies. David Lovekin argues that “science fact is indistinguishable from science fiction” (92) so that science fiction fills the void created by the recognition that “science and technology cannot provide a society with a sense of being and purpose” (99). Further, Lovekin suggests that science fiction is a “kind of mentality, a form of consciousness” which provides a “sense of being and purpose, meaningful ritual and a sense of place” that technology by itself cannot provide (74, 99). The scenarios of science fiction often sound so much like scientific reality that in the past “the imaginative emancipation offered by science fiction traditionally lay in its capacity to create magical new worlds. In contrast, science fiction now shocks us by its resemblance to fact” (Squier 213). Science fiction’s resemblance to fact means it offers one method of developing a sense of purpose in narratives that confront new technologies like those that might produce posthumans.

A Social Science Fiction(al) Novel

The Calcutta Chromosome is a science fiction novel that rewrites the scientific history of the discovery of the malarial parasite by placing that discovery in the hands of an Indian woman.

⁶⁶ In this way, science fiction sounds like one of Deleuze and Guattari’s characteristics of minor literature: that everything in it is political (“Minor Literature”). Similarly, Nicholas Ruddick suggests that the British understand science fiction as a field consisting of a “loose association of diverse elements by contiguity” (1) where estrangement functions to challenge normative systems. This kind of thinking can also be seen in Veronica Hollinger’s description of science fiction as “both a fictional genre and a discursive field” (2) that becomes less and less easy to distinguish from the technologies it is surrounded by, and Gary Wolfe’s suggestion that over science fiction’s history, its “genre markers remained radically unstable” (15).

The alternate history of *The Calcutta Chromosome* results in a history of colonial medicine that differs from “official” historical records.⁶⁷ This alternate history means that the novel not only presents us with a particular kind of posthuman, but it also challenges the construction of scientific knowledge (including the biotechnologies characteristic of posthuman knowledge) as a primarily Western phenomenon.

De Witt Kilgore suggests that the fiction of mid-twentieth century British writers like Arthur C. Clarke is “traceable to the imperialist narratives popularized early in the twentieth century.” Such fiction creates storyworlds in which “political and social power will flow in patterns similar to those that underwrote the popular literature of imperial Britain: the dominance of English-speaking people and culture, racial hierarchy (though liberalized), the absence of women within the adventure, and a renaissance that will allow Western culture to improve without end” (123). By the end of the twentieth century however, this replication of the imperialist project in science fiction has been replaced with counter-narratives featuring not only women, but also former colonial peoples as the heroes of the story. In Ghosh’s novel, it is the lower-caste Indian woman, Mangala, who controls the “technology” of the novel. The novel provides very little detail about the nature of that technology; rather, it focuses on how the technology affects the lives of those who come in contact with it and the development of malarial science in the nineteenth century. Paul Kincaid identifies this focus on the social effects of technologies as typically British because British writers “spend less time than their American counterparts inspecting the wonderful machine and more time recounting life when the machine

⁶⁷ The sub-genre of “Steampunk” science fiction engages in a similar strategy in that it imagines technologies existing in ages earlier than those in which they were developed. Charles Babbage’s Difference Engine – a precursor to the computer that Babbage never managed to get working – is one technology often imagined to emerge earlier than it did. For example, William Gibson and Bruce Sterling’s *The Difference Engine* (1990) imagines that Babbage overcame the lack of precision machining, which was what kept him from building his machine in the nineteenth century, to produce a computer a century before it was actually invented.

was working (or, more often, not). Their subject was not the relationship between the hero and the innovation, but the relationship between the ordinary person and the world after the innovation” (53-54). This emphasis on invention’s social effects can be seen in Ishiguro’s *Never Let Me Go*, which focuses on the effects of the technology of cloning rather than explaining how it developed.

Diane Nelson suggests that *The Calcutta Chromosome* might be considered as part of the sub-genre of social science fiction, which she describes as “a laboratory for unsettling assumptions about the human, a way to read techno-biopower and our mutated time-space regime” (250-1). The technology represented in the social science fiction of *The Calcutta Chromosome*, a form of bio-power, does unsettle our ideas of the human by presenting us with a type of posthuman that surpasses the limitations of the human (particularly human reproduction) but also seems to produce posthumans that are fundamentally different from humans.

The book, subtitled “a novel of fevers, delirium & discovery,” is focalized through Antar, a minor clerk for the International Water Council, a conglomerate that controls declining global supplies of water. Antar is a cosmopolitan figure, having been born in India, educated abroad, and then working on the Indian sub-continent until he eventually relocated to New York.⁶⁸ While compiling an inventory, Antar comes across the effects of his missing colleague, Murugan. The story Antar finds of Murugan’s disappearance is complex and incomplete, but begins with actual historical events, starting with Ronald Ross’s discovery of the mosquito as the vector for malaria in 1898.

⁶⁸ Antar’s biography in some ways mirrors Ghosh’s, who was born in Calcutta, lived throughout the sub-continent, was partially educated in England and now lives in New York.

In the nineteenth century, little was known about malaria, but it was used as a treatment for syphilis.⁶⁹ In the novel, *Mangala*, an Indian woman working the lab, independently discovers a strain of malaria that can be incubated in a pigeon instead of the usual mosquito. The side effect of this incubation is the formation of the Calcutta Chromosome in the malarial parasite. This Calcutta Chromosome is transferred from the human host to the malarial strain, which can then be injected into another human, in effect, transferring the Calcutta Chromosome from the first human donor to a second human infected by that malarial strain. In the story, this creates a personal transference of characteristics, which results in a kind of immortality.

The response to the novel suggests that the generic classification of this novel troubled some reviewers. Although *The Calcutta Chromosome* (1995) won the 1997 Arthur C. Clarke award for best science fiction novel, many reviewers identified the novel as a mainstream thriller. For example, The New York Times book review by James Saynor describes the novel as “a thriller with overtones of profundity,” “a finely carved mystery” and a “Rubik’s Cube of a novel.” Saynor’s review glosses over the novel’s science fictional aspects, focusing instead on Ghosh’s use of the internet as “an intimidating, all-seeing consciousness,” a description which seems to ignore the theme of reincarnation, scientific discovery and manipulation, and the notion that the human personality might survive the death of the body (Saynor “Trapped in a World Wide Web”). Even John Clute, fellow science fiction writer, describes it as “a tale decent folk can buy without embarrassment,” an ironic recognition of the fact that science fiction is a marginal genre in publishing and in the reading tastes of the general public (Clute “A Tale

⁶⁹ Julius Warner-Jauregg received the Nobel prize in Medicine in 1927 after “he discovered that artificially induced malaria could cure syphilis – at least in the dementia paralytic stage when it attacks the brain... Artificially induced malaria was the standard treatment for syphilitic paresis until the forties. Fact is, malaria does stuff to the brain that we’re still just guessing at” (Ghosh 55). Syphilitic paresis, the final stage of the disease, actually improves in patients with malaria. Both malaria and syphilis are able to penetrate the blood-brain barrier, but the effect of malaria on syphilis was never well understood and with the advent of antibiotics, was abandoned as a treatment.

Decent Folk can Buy”).⁷⁰ Such rejection of the label “science fiction” for a novel that won a science fiction award and that clearly engages scientific themes, suggests the novel might become an appropriate venue for a thought experiment about the posthuman that is not bound by generic conventions.

Amitav Ghosh, whose book is described as a thriller despite winning a science fiction award, has also been described as a postcolonial writer. Although Ghosh embraced the science fiction award for this novel, he disavows the postcolonial label, even though other postcolonial writers and critics identify him as one (Mondal 2).⁷¹ This observation, along with the reviewers’ careful avoidance of the science fiction label, suggests that some writers may wish to disown labels like ‘postcolonial’ or ‘science fiction’ because those labels threaten to fix them at the margins of literature. But it is at the margins that boundaries are located and where it is possible to play with boundaries in order to explore how boundaries might otherwise limit the possibilities of the story and our conception of the human and the posthuman presented within.

The transfer of the genetic material contained in the Calcutta Chromosome is the alternate technology that matches the alternate history. The effect of this alternate technological history trickles down into the early twenty-first century, where Antar’s access to a high-tech virtual computer interface suggests another method for transcending death might lie in the ability to create virtual realities where one might continue to live. The narrative suggests that one might

⁷⁰ Even more careful to avoid the label of science fiction is Christopher A. Shinn in his critical literary analysis “On Machines and Mosquitoes: Neuroscience, Bodies, and Cyborgs in Amitav Ghosh’s *The Calcutta Chromosome*.” Despite the prevailing argument about human-computer interfaces and biotechnologies, Shinn describes the novel as “def[y]ing easy categorization, being equal parts medical mystery, historical novel, ghost story, and postcolonial thriller” (145), despite the absence of supernatural spirits in the story.

⁷¹ In this, Ghosh’s response is similar to Margaret Atwood’s disavowal that she writes science fiction. In Atwood’s case, her objection is based on an assumption that science fiction is about rockets and space travel (hard science fiction) which would clash with the social commentary in many of her novels. Ghosh’s rejection of the label of postcolonial writer similarly reflects his concern that the label would limit the kinds of possible readings of his texts.

continue to exist or be reincarnated via biological means and hints that the same process might also take place via technological means.

This transference of personal essence, whether through biology or technology is an echo of the spiritual transference of human essence found in ideas of heaven, or more specifically to the mode of transference presented in this novel, reincarnation. The novel's engagement with reincarnation may reflect that state of the soul, as imagined by this author and the larger public of which he is a part. Regardless of the reason, reincarnation, or even personality transference via computer, both rely on the premise that there is a fundamental core of the human that is capable of transfer from one body to another, so that Ghosh's novel links the technological, transhumanist dream of transcending the limits of the body, with a spiritual belief of reincarnation as the "fresh embodiment of a person" (OED). As we saw with Kathy H. in *Never Let Me Go*, the state of one's soul can mark whether one is human or not and in contemplating this narrative, we might consider how it presumably can transcend the death of the body as well.

Reproducing Posthumans in Social Science Fiction

The posthumans in *The Calcutta Chromosome* are fundamentally different from the humans that surround them because of the way they reproduce themselves. The Calcutta Chromosome allows Mangala's followers to transcend death by retaining human consciousness through the transfer of blood, or through a computer interface. *The Calcutta Chromosome* presents us with one of the most striking features of the posthuman – its unnatural reproduction.

Although Mangala's followers are not disrupting the process of reproduction *per se*, they are disrupting the normal progression of lineage, where the older generation dies in order to

make way for the younger, which inherits both genetic material and wealth. In this novel, individuals retain their identity through multiple reincarnations by manipulating DNA transmission in non-reproductive ways. There are two features of the Calcutta Chromosome of interest here in this posthuman and postcolonial social science fiction. The first is the recognition that the Calcutta Chromosome is a powerful analogy for what could be a scientific reality because what the Calcutta Chromosome does is akin to what the other twenty-three chromosomes in all human cells do, though via a different mechanism. Murugan explains that:

One of the reasons why the Calcutta chromosome can't be found by normal methods is because unlike the standard chromosomes it isn't present in every cell. Or if it is, it's so deeply encrypted that our current techniques can't isolate it.... This is a chromosome that is not transmitted from generation to generation by sexual reproduction. It develops out of a process of recombination and is particular to every individual. That's why it's only found in certain kinds of cells: it simply isn't present in regenerative tissue. It only exists in non-regenerating tissue: in other words, the brain. (250)

The recombination Murugan describes is not the recombination of natural reproduction, where the genetic material from two individuals merges into a new one; rather, this recombination replicates characteristics of just the individual in whom the Calcutta Chromosome is found. Murugan theorizes that certain human traits are imprinted on our biology, altering it, and those traits could be transmitted through the Calcutta chromosome to the next person infected by the malarial virus.⁷² As such, the Calcutta Chromosome is the raw material from which a transformation to the posthuman might be possible.

⁷² In Murugan's observation, we find echoes of the suggestion in *The Satanic Verses* that extreme pressures can alter an organism, an observation originally proposed by Jean-Baptiste Lamarck in 1809.

The exact nature of the Calcutta Chromosome transfer is unclear, however. Antar realizes when he finds Murugan that the women he knows as Tara and Maria in New York are Urmilla and Sonali, who have come “across” as a result of their infection with the Calcutta Chromosome, just as Lutchman, Romen and Mrs. Aratounian (Mangala) did. Although Sonali witnesses Romen’s transference ceremony, the novel does not make it clear which other character is involved in the transformation. In fact, the whole notion of a transformation is merely hinted at, a mystery that is described in bits and pieces that the reader must piece together. This leaves the reader to speculate which of the characters within the multiple timelines of the novel are full reincarnations of each other, a situation that suggests that the individuality of the characters does not matter as much as their continued existence. Murugan’s description of the Calcutta Chromosome as a “trigger” for a “quantum leap into the next [story]” (218) suggests that it might be a form of punctuated equilibrium, like that contemplated by Saladin during his transformation.⁷³ Transferring consciousness from one body to the next is one way the human becomes posthuman because such a transfer would transcend the limitations of the human body through a kind of cloning of the original human consciousness. Likewise, the suggestion at the end of the novel that Mangala’s followers have perfected a similar transfer via computer interface, would allow humans to transcend the limitations of the organic body, replacing it with a mechanical one, or the silicon pathways of a virtual reality existence within the computer.

The second important feature of the Calcutta Chromosome is its identification with Calcutta. In the narrative, the Calcutta Chromosome could only be discovered in the colonial

⁷³ This transformation also resembles the sudden shift in technological development called the Singularity. The Singularity, first imagined by Vernor Vinge in the mid-1980s, is the moment when technological exponential growth will reach a point beyond which life, including humans, will be unrecognizable because of the growth in machine intelligence and other technologies. In addition to Murugan’s suggestion of a ‘quantum’ leap in human development, the final scene in *The Calcutta Chromosome* in the virtual reality environment of the computer suggests that this leap will be technologically mediated through the mind/body interface of virtual reality.

margins of nineteenth-century Calcutta because it is “exactly the kind of entity that would be hardest for a conventional scientist to accept” (250-51). Murugan describes a servant woman named Mangala, who works in the lab where Ronald Ross conducted his malaria research, and who seems to know a lot more about malaria than she would have, had she been taught by researchers. Mangala is not “hampered by the sort of stuff that might slow down someone who was conventionally trained: she wasn’t carrying a shit-load of theory in her head” (246). Instead, she has developed secret knowledge as well as a following of other Indians who believe she can cure people in the advanced stages of syphilis. She exploits the way that malaria can cross the blood-brain barrier to produce “weird neural effects” which make its fevers “more hallucinogenic than any mind-bending drug” in order to treat late stages of syphilis that has infected the brain (249). And she does so in ways that defy traditional notions of scientific experimentation and progress.

Mangala’s “experiments” with interpersonal transference through the Calcutta Chromosome lie outside of the colonial mechanisms of health and administration. In the late nineteenth century when Ronald Ross is working on malaria, Europe is colonizing the last parts of the globe, but malaria, which is present in just these last places to be colonized, is presenting a challenge (56). In India, Murugan proposes that a group practicing what he calls “counter-science” is operating, but under different principles than scientists in Europe. This counter-science, being based on principles opposite to those of traditional science, must “use secrecy as a technique or procedure. It would in principle have to refuse all direct communication, straight off the bat, because to communicate, to put ideas into language, would be to establish a claim to *know* - which is the first thing that a counter-science would dispute” (104-5). The suggestion that secrecy is the key to counter-science opposes it to how science is defined by Western countries.

Ghosh's suggestion in the novel that this scientific breakthrough was actually facilitated by an indigenous search for knowledge complicates the traditionally understood European discovery of malaria. Furthermore, the personal transference that Mangala and her followers are searching for sounds like reincarnation beliefs within that indigenous culture. In keeping with the mystical nature of reincarnation, the novel never makes it clear whether the transference of the Calcutta Chromosome results in a violent takeover of the new body, or the integration of the host and the new consciousness into a single, posthuman consciousness (like that of Grimus-Flapping Eagle). The only transference ritual represented in the novel is witnessed by Sonali Das, who only catches a glimpse of a matronly figure, birdcage, scalpel and body lying on the floor before she is overcome by the ritual incense (167). We find later that it is Sonali's boyfriend, Romen Halidar, who was lying on the floor, but we never learn whether he was a willing participant in the ritual to bring Mangala's companion, Laakhan, through to a new body via the Calcutta Chromosome (292). The account of the transference focuses on the deliberate injection of the Calcutta Chromosome into the new host body, not what happens to the consciousness that inhabited it at the time of the transfer.

Indigenous knowledge like Mangala's is usually not seen as a contributor to the advancement of scientific study, and the scientific relationship between the colony and centre is usually imagined as a one-way street. Anshuman Mondal notes that this novel "reverses the direction of scientific knowledge and challenges the 'diffusionist' narrative of scientific discovery whereby knowledge travels out from the Western centre to the non-Western periphery. In so doing, Ghosh actually shows how subalterns and subaltern knowledges trouble the very concept of 'discovery' itself" (55). Mondal suggests that Ghosh is not seeking to supplant modern knowledge but to make the point that "the universalism of modern knowledge is founded

in its monopoly of claims to ‘valid’ or legitimate knowledge – all ‘other’ knowledges cannot be admitted *as* knowledge” (57).

The science that creates the Calcutta Chromosome is also unnatural; the anti-science or anti-knowledge of the Mangala group rests upon a principle of secrecy, which is as necessary to the development of anti-science as the sharing of knowledge is to traditional science. But the tension between the secrecy of anti-science and the conventions of more traditional science also suggests that the knowledge of this personality transference rests on a kind of impossibility of knowledge. Mondal suggests that this “is a space-clearing gesture which enables Ghosh to suggest that *The Calcutta Chromosome* has set itself an impossible task, that its effort to represent subalternity is not fully achievable, that there is no means by which to represent ‘pure’ alternatives to modern knowledge.”⁷⁴ Mondal further suggests that this counter-science might be better understood as a “deconstruction of the myth of scientific rationality, which bases its claim to ‘pure’ knowledge on the very concept of ‘discovery’ that is shown to be impossible” (59). In deconstructing the myth of scientific rationality, the novel questions the validity of modern conceptions of knowledge. In this case, the novel’s challenge to the construction of scientific knowledge might also lead us to consider how a similar challenge of other forms of knowledge might look, for example, the challenge to the category of “human” we see in this and other texts.

As we have already seen, the Calcutta Chromosome’s mode of transmission circumvents

⁷⁴ Mondal’s suggestion that Ghosh’s use of alternate forms of knowledge is a “space-clearing gesture” that challenges the validity of modern forms of knowledge production echoes Anthony Appiah’s “space-clearing gesture” in which the *post-* of the postcolonial functions to transcend the limitations of the colonial label in artistic production. In “Is the Post- in Postmodern the Post- in Postcolonial?” Appiah suggests that postmodernism operates to clear a space within the “proliferation of distinctions that reflects the underlying dynamic of cultural modernity” (346); this means that in the context of the African plastic arts that Appiah is discussing, the post- in postcolonial does not describe a state beyond the colonial or even necessarily in opposition to something clearly defined as the colonial, rather, the postcolonial is also a space clearing gesture “not in this way concerned with transcending, with going beyond coloniality” (348). The space-clearing gesture in both Appiah and Ghosh rejects the dichotomies of Western/indigenous knowledge or colonial/postcolonial, offering other ways of imagining that are not so oppositional.

traditional modes of reproduction and inheritance, setting up an unnatural kind of immortality that seeks to retain the individual's experience throughout multiple incarnations of life. Those individuals who transmit themselves from body to body via the Calcutta Chromosome could be said to be posthuman since their consciousness extends beyond their original human bodies; it is this kind of challenging of the one-way flow of knowledge in Western medicine and science which leads critics like Diane Nelson to label this text as both a postcolonial text and as a social science fiction.

The challenge to the hegemony of Western production of scientific knowledge in the novel rests on the suggestion that reincarnation and mysticism might provide an alternative means of constructing knowledge. The physical nature of reincarnation by Calcutta Chromosome makes Mondal's question: "Is a belief in immortality that is promised by genetic engineering any less dependent on faith than one based on a theory of reincarnation?" (61) appropriate. While the language Murugan uses to describe the "interpersonal transference" or "immortality" (Ghosh 107) of the Calcutta Chromosome is not identical to reincarnation, the similarities are striking. At one point in the narrative, Murugan asks Antar,

'Now what would you say... if all that information could be transmitted chromosomally, from body to body? ... Just think, a fresh start: when your body fails you, you leave it, you migrate – you or at least a matching symptomology of your self. You begin all over again, another body, another beginning. Just think: no mistakes, a fresh start. What would you give for that, Ant: a technology that lets you improve on yourself in your next incarnation? Do you think something like that might be worth a little part of your pension fund?' (108-9)

The suggestion that reincarnation takes place through the transfer of material via the blood and through what Murugan has dubbed the “Calcutta Chromosome” proposes that the gene as the means for inheritance might not be the only way in which traits can be passed on. This suggestion reminds us of course of the challenge the posthuman presents to traditional definitions of the human as organic, naturally born, and unenhanced. The novel’s challenge to Western constructions of knowledge might be read as analogous to posthuman (or transhumanist) challenges to similar hegemonic definitions of the human.

In Ghosh’s novel, mysticism and medicine are the means to realize the posthuman desire to transcend the limitations of the human lifespan.⁷⁵ *The Calcutta Chromosome* suggests that the human is dependent on a kind of continued consciousness – bodies come and go in the text – but that consciousness is not individualized, that is, what is important is that a Laakhan or Mangala “type” continues even if the body changes. The switch at the end of the novel from blood transference to electronic transmission via the virtual reality interface that Antar uses to literally enter the story also suggests that the medical malarial technologies used to transfer the Calcutta Chromosome might be supplanted by more efficient transference through the electronic interface of the computer. The novel suggests it is possible to experience a continuous consciousness through a mechanism like reincarnation, but this reincarnation has been re-imagined through a disembodied virtual reality rather than the corporeality of blood and genetic material.

⁷⁵ The abolition of death, or at least a method for circumventing the eventual breakdown of the body that all humans experience is the cornerstone of transhumanist efforts. The medical establishment’s involvement in this goal might be embraced by transhumanists, but medical intervention into other natural processes of the body has often been interpreted as a warning sign because such interventions require re-imagining the normal human body in ways that exclude some subjectivities. Elaine Graham suggests that as new reproductive technologies “redraw the boundaries between born and made” (111), they also re-envision the cultural categories of parenting and fertility, often reifying a heteronormative valuation of the nuclear family as the appropriate site for the conception, gestation and raising of a child. Graham cautions against medical intervention, not because she wish to maintain some ideal of the ‘natural’ human body, but because each intervention risks ignoring important aspects of an individual subject’s experience.

Artificial Minds and Bodies in *The Stone Canal*

The Calcutta Chromosome imagines a way in which technology might replicate reincarnation, to extend a normal human lifespan. Ken MacLeod's *The Stone Canal* imagines how posthuman technologies might not only prolong existence, but also investigates the social and political ramifications of extending existence beyond the normal lifespan of the human body. The political settings of the novel include democratic, socialist and libertarian states, both on earth and on New Mars, the planet that humanity settles when earth becomes over-populated. *The Stone Canal* is set in twenty-first century Glasgow, as Jon Wilde and his friends find their lives intertwined with some major political moments, and twenty-fifth-century New Mars, where Jon finds himself in the middle of another set of major social and political upheavals. What the centuries have in common is their development of technologies that are able to separate the human mind from the human body in order to travel through space, but this separation challenges political and social definitions of the human.

In the novel, humans have figured out how to download a mind into a computer. Some of these minds run machines, while others are connected with each other to form hives of linked downloaded minds called the fast folk. With their intelligence amplified by the collectivity of the hive, the fast folk build a wormhole in Jupiter's orbit that leads to a habitable planet: New Mars. Partway through the novel, Jon finds that his consciousness has been uploaded into a machine being used to build this wormhole. His old friend from Glasgow, Dave Reid, greets his newly aware self to explain:

Welcome to the Singularity. What you're seeing outside is the work of billions of conscious beings, living and thinking thousands of times faster than you. The entities

[other machines like the one Jon inhabits] crawling among the struts of this structure are entire civilizations of humanity's descendants. Those macro-organisms, or macros, as the humans around here call them, are constellations of smart matter – what we used to call nanotech – each of them capable of sustaining virtual realities that are the homes of millions of minds, some originally human, some artificial intelligences. (MacLeod 279)

In this description, we see a blending of artificial intelligence (AI) and artificial storage of human intelligence of some of these twenty-fifth century posthumans. In Jon's case, his mind was downloaded from his body when he died. Dave offers Jon a choice: have his mind re-loaded or re-booted to its unconscious state, or continue to live a conscious life in a virtual reality apartment within the machine that his mind will continue to operate.⁷⁶ Jon chooses to stay conscious (280-1).

While occupying this robotic body, Jon takes on the name, Jay-Dub, and through a loophole in the programming of the machine, he is able to amplify his own innate intelligence within the computer with the help of a computer-generated helpmate, Meg. Jay-Dub's reward for being so inventive is to be sent by Dave into the computer that houses the fast folk in order to investigate their bizarre behavior. He is lucky to get back out just before the fast folk go crazy and have to be contained to prevent the spread of their peculiar form of disembodied (and collective) madness.

Jay-Dub and Meg travel within his machine body to New Mars helping to establish the colony there, but they are eventually shunned by the rest of the inhabitants, who have cloned their bodies and downloaded their minds into them. The inhabitants of New Mars made the trip in one of two ways: in their original bodies, or as uploaded minds stored in computer systems,

⁷⁶ The offer to reboot is made available to Jon as it is to other downloaded consciousnesses that become aware of their situation because those who control the machines have found that most people do not wish to live as only a disembodied consciousness, no matter how convincing the virtual reality environment.

which were then downloaded back into cloned bodies when they arrived on the planet. This leads to a prejudice against anyone whose mind is still located solely in computerized form within robotic bodies. The narrator tells us that the New Martians believe: “People are people. Robots are robots. Along with that goes an almost hysterical feeling against blurring the distinction between VR and actual reality. Everbody is convinced that was how the fast folk went bad, or mad” (325). Because of a glitch caused by his amplified intelligence, he and Meg find themselves unable to download their minds into cloned bodies and ostracized by the inhabitants whose downloaded minds occupy organic human bodies. New Mars society eventually declares that the only real humans are the ones who occupy organic human bodies with “original” downloaded minds, not AI minds. It is into this society that Jay-Dub clones Jon Wilde’s body, into which he in turn downloads a copy of Jon’s original mind. This Jon Wilde, unlike Jay-Dub, is fully human in the legal setting of New Mars, and in response to the inequity he sees in New Mars, Jon Wilde sets about changing New Martians’ minds about who gets included in the category of the human. His legal challenge suggests that the form of the body is less important than the mind that inhabits it, a definitive declaration of which half of the mind-body dichotomy MacLeod privileges in defining what constitutes humanity.

MacLeod explicitly sets this narrative of posthumans in the libertarian new frontier of New Mars in order to flesh out how freedom from legal and fiscal constraints creates a political climate in which he can imagine the potential rights of posthumans without limitations. The distinction between human and machine in particular is worked out in the context of unrestrained capitalism. In such a context, Annalee Newitz’s argument that monsters represent the subjective social alienation that Marx identified as arising out of capitalist society is one way to understand the posthumans represented here. Newitz suggests that capitalist monsters in fiction are

motivated to act in responses to forces beyond their control “which place them at the mercy of social, rather than ‘natural,’ forces” (9), much the same as posthuman figures in the novels under discussion are at the mercy of social attitudes towards their bodies they inhabit, more so than the natural limitations of those bodies. That the monsters are constrained by the economics of labor and production in Newitz’s argument is what makes them monstrous in the first place.

The Marxist and Libertarian novelist Ken MacLeod has directly engaged with the issues of labor and production in a posthuman economy in his *Fall Revolution* series: *The Star Fraction* (1995), *The Stone Canal* (1996), and *The Cassini Division* (1998).⁷⁷ In these novels, there is little difference between naturally-born humans, reconstituted minds, and robotic entities in their perceptions of their own subjectivity, but the social and economic structures that govern their relationships with others are structured in ways that draw attention to how the methods and rationales used to define the human create difficulties for those who do not easily fit into the category. Within these novels, there is a reluctance to accept mechanical posthumans as human because their development does not follow the same trajectory as that of the organic human.

In *Robot: Mere Machine to Transcendent Mind*, Hans Moravec imagines the disembodied human differently than MacLeod, suggesting that if a machine acts like a human and its behavior is indistinguishable from that of other humans, people would accept it as a human. He suggests that most people “are likely, after a period of suspicion, to begin taking machines that interact like intelligent, decent persons at face value, regardless of unseen internals, because it is the most effective alternative.... So, it may be appropriate to say ‘God’ has granted a soul to a machine when the machine is accepted as a real person by a wide human

⁷⁷ For more on MacLeod’s politics and its effect on his writing, see for example, the Salon Books interview with Andrew Leonard, “An engine of anarchy” on July 27, 1999. Two novels of the *Fall Revolution* series were also nominated for the Arthur C. Clarke Award that *The Calcutta Chromosome* won. In 1996, *The Star Fraction*, the first novel of the series was the runner-up for the award and *The Cassini Division*, the third novel, was shortlisted in 1999.

community” (77). In *The Stone Canal*, this does not happen – there is a persistent emphasis on the internal state of the being, so if it is not organic through and through, it is rejected as not human. This might lead us to question which of these visions represents a more humane future. Moravec suggests that the difference between human and machine may become a moot point in the event of something like the Singularity, because “sufficiently developed entities... will be living memories in unimaginably powerful minds, more secure in their existence, and with more future than ever before, because they have become valued houseguests of transcendent patrons” (165, 167). These powerful minds are just one of the kinds of posthumans that MacLeod imagines in *The Stone Canal* and it is telling that in MacLeod’s novel, they are referred to as the “fast minds,” a name that gives some idea of their difference while simultaneously differentiating them from the characteristically “slow” minds of the unmodified or only body-modified humans.⁷⁸

MacLeod’s novel series also explicitly engages with politics and forms of government that these posthumans must negotiate. Describing his purpose in writing the series, he suggests that “the agenda for the Fall Revolution books was set, primarily, by *Neuromancer* and *Snow Crash*. The question I wanted to put to them was, ‘What would this kind of world be like, if you brought politics back in?’” (“Profession of Science Fiction” 13)⁷⁹ In the novel, three distinct

⁷⁸ This sense of superseding the limitations, particularly in the perceptions of unaltered humans emerges in narratives of the Singularity – the point at which technology will so radically alter human existence as to be incomprehensible to contemporary humans. In his discussion of Vernor Vinge’s novelization of the phenomenon, Colin Milburn describes how the characters in Vinge’s *Marooned in Realtime* (1986) find themselves transported temporally across the Singularity to find that humans and all traces of human technology have vanished, leading Milburn to conclude that the “limit of the intelligible” functions as a mirror and that “alternative futures remain invisible, veiled by the mirror... We are blind to the beyond” (3). Milburn’s explanation suggests that any vision of the future including Moravec’s or MacLeod’s cannot be predictive. All it can do is give us ideas of how we might shape our present to avoid the dystopic visions and embrace those technologies that would hasten the development of utopic ones.

⁷⁹ William Gibson’s *Neuromancer* (1984) is often considered the first cyberpunk novel, presenting a world in which most people “jack into” cyberspace directly, and demonstrate a disdain for the weakness of the body (“the meat” as Case, the “console jockey” and protagonist describes it). *Snow Crash* (1992) by Neal Stephenson is often regarded as a “second wave” cyberpunk novel about an online (linguistic) virus that is capable of not only infecting avatars in

political systems are presented: late-capitalism, anarchism, and socialism, with the future state of New Mars politics projected to be a kind of libertarian-capitalist anarchism. In the political structures of the novel, we are reminded of Deleuze and Guattari's definition of minor literature as literature in which everything is political so that a science fiction novel like this might also be understood as a political form of literature (166).

Similarly, in his introduction to an issue of *Historical Materialism*, science fiction writer China Miéville calls on Marxists to "take seriously the specificity of that fantastic mode" because "'real' life under capitalism is a fantasy" thus "'realistic' books may pretend to be about 'the real world' but that does not mean they reverberate within it with more integrity and insight" (336).⁸⁰ What both MacLeod and Miéville suggest is that fantastical modes like science fiction are the ideal grounds on which to make politically-relevant statements about the kind of world we live in, or the kind we might like to live in. Public or scientific discussion of emergent technologies can be informed by such narratives as when Sheryll Vint connects fictional representations of genetic engineering with "real" science because "many non-fictional accounts of genetic engineering (how we should use it, why we should use it, who should use it) are ideological stances about values rather than simply hard scientific fact - are in fact ... 'metaphorical' and 'symbolic'" (196).⁸¹

cyberspace (the "Metaverse" of the novel), but of hopping the divide between cyberspace and real life to infect physical human bodies. Both novels rely heavily on technologies of various sorts as impetus for plot development, but these plots are individualized through their protagonists – Case and Hiro Protagonist respectively – rather than through the larger social ramifications of such technologies.

⁸⁰ Miéville also claims in this introduction that a larger number of leftist writers operate in science fictional/fantastic modes than would be statistically probable, suggesting that these genres are especially hospitable to such political ideals (337).

⁸¹ Colin Milburn also suggests in *Nanovision*, that nanotechnology, because it is still in developmental and theoretical stages, is both a science and a science fiction; nanowriting – writing about nanotechnology – is "a postmodern genre that draws from, and contributes to, the fabulations of science fiction" (24). Because nanotechnology is unrealized as an established technology, it exists primarily as linguistic declarations of its potential. A science fiction novel is also primarily a linguistic declaration or "thought experiment" about a technology's potential as well. A novel about nanotechnology like MacLeod's thus is as legitimately a part of the nanotechnology dialogue as "scientific" treatments of the topic because "science fiction assumes an element of

The Stone Canal suggests that regardless of what philosophies or values we might rationally choose in order to define humans, even in a supposedly enlightened future it is those who wield economic and political power that will decide those definitions, and those definitions will exclude the powerless. In the novel, we see this in the Dee Model, a mechanical human. Dee Model was created by Dave Reid as a gynoid or sex toy, based on a cloned copy of Annette's body (Jon's wife). Reid's selection of Annette's body as model for the artificial being he creates is not simply business – it reflects his earlier affair with Annette, and reveals the lie in his statement to Jon that it was an obsession, but that “I got over her and she got over me” (125). Apparently in MacLeod's future, technology has advanced in staggering ways, but human emotions like jealousy, lust and revenge remain mired in the twenty-first century.

Because Dee Model was only supposed to be an intelligent AI housed in a cloned body, Dave Reid did not foresee the effect that the knowledge she was a clone would have on her. But in the course of the novel, Dee becomes self-aware; shortly thereafter, she discovers a picture of Jon and Annette's wedding and realizes she is cloned from Annette. This disturbs her so that:

Dee can't look at the picture any longer, and doesn't need to: this image will stay in her mind forever unless she deletes it. It's creepy, all right, and disturbing in a deeper sense: this distant twin, this woman whose physical ghost Dee is, looking happy in a way Dee has never been, with a personality Dee knows is different from her own. Only the physical body, and the underlying temperament which, Dee knows, is likewise genetic, are the same. (98)

transgression from contemporary scientific thought that in itself brings about the transformation of the world” just as nanotechnology holds the promise of transforming the worlds of manufacturing, medicine, and environmental clean-up (ibid.).

Dee's conviction that her temperament is like that of the woman she was modeled on suggests she is as fully human as any other character in the story.⁸² Her humanity seems particularly secured when later she later commits a string of murders, something we might describe as an all too human capability.

After becoming self-aware, Dee Model meets Ax Terminal, who suffers from a genetic disease that kicks in at puberty, so he has fixed his age at about twelve years old to prevent it from activating. As someone suffering from this genetic twist of fate and a "professional eunuch and part-time catamite" (50), Ax is bitter with his lot in life, and in the course of conversation, Dee Model begins to realize how she too had been mistreated by Reid, so that when Ax asks her "Have you ever thought – what you would like to do to people who've treated you like *meat*?" (100) she joins him in his vengeful killing spree. Dee finds herself wondering if she will be able to murder a human being: "She recalls people talking, talking as if she wasn't there, of the potential dangers of AIs wandering around in human guise, and she knows that humans set great store by *the permissions*" (129). The controls that governed her behavior as a machine constrain her actions in a similar way as Ax's permanent pre-pubescence limits his possibilities for employment. When Dee kills her first human "she grins at Ax... 'Now I know,' she says, 'I do have free will'" (140). The murders have freed her from the lack of choice she had as mere AI, so that she can declare: "technically and legally I'm a decerebrate clone manipulated by a computer. Neither component is anything but an object, but *I* feel like I'm a person" (14).

⁸² Of course the passage is also suggestive of the nature versus nurture debate over which controls human development and behavior. While Dee claims that Annette's and her underlying temperament are the same based on their shared genetics, her observation that they must have different personalities can be attributed to Annette's status as a full grown human being and Dee Model's only recent awakening to her selfhood. One might speculate what kind of personality Dee Model might develop given time and how it might differ from Annette's development on a different planet centuries earlier. Dee's conviction that the woman she was modeled on affects her nature also echoes Kathy H.'s obsession in *Never Let Me Go* with finding out who her 'possible' was in order to explain her sexuality.

Dee struggles to articulate her relationship with humans, who are persons just as she feels herself to be, yet different. As she contemplates the humans that surround her, she comes to the conclusion that “they are not her species... It’s a bit disappointing, since she’s only felt like a human being for a couple of days, and she has every intention of keeping it to herself, especially if the question of her human status ever becomes a matter of learned dispute” (163). During her killing spree with Ax, she is amazed at the disconnect she feels from those she kills. She thinks, “perhaps she’s human, all right, and her victims are not. Perhaps what they all have in common is a parasitic mimicry of humanity, which she can see through.... She wonders if the ostensibly human species – or hominid genera – are divided between real people and some hollow mockery of people” (164). Dee’s meditation on whether those other beings are human like she feels herself to be, or hollow automata who only mimic humans echoes Moravec’s suggestion that behavior is the only means by which we can decide who is human and who is not.⁸³ In Dee’s vision, the lack of humanity in the humans she encounters may be because they do not possess the humanity she seeks there, but it may also occur because she herself as a machine that has become self-aware is missing the key human emotion of empathy. The novel leaves it up to the reader to decide which situation applies here, or whether it might be that both conditions exist to a certain extent.

What is at stake in the narrative is autonomy. The struggle undertaken by Dee Model and JayDub to be recognized legally as autonomous agents presents itself as an injustice against their clearly human nature. For example, the resurrected Jonathan Wilde has a charge brought against

⁸³ The idea that people might be nothing more than hollow shells also echoes Bhabha’s ‘mimic men’ and the fear in *Never Let Me Go* that the clones are also nothing more than hollow shells without any internal essence. MacLeod also questions the use of behavior or practice as a means of determining the human. In another scene, Dee, Ax, Jon Wilde and Tamara encounter a group of robots who have developed “what some humans had once considered a defining feature of humanity: a religion” (271). These robots believe they were created by Adam, a smith, and were liberated through the rapture of the Industrial Revolution with all the fervor and dedication of any human religious ceremony. The robots, though clearly mechanical, exhibit behavior that in a creature that looked more human would be considered distinctly human behavior.

him by Dave Reid that his robot JayDub corrupted Dee Model's control systems so that she became self-aware. He counters that the charge should be dropped with the argument he (Jon Wilde) is not Jay-Dub and that Jay-Dub is an autonomous robot that Jon Wilde has no control over. His linguistic argument is that Jay-Dub is simply a synonym for Jonathan Wilde; Wilde argues that financial transactions with Jay-Dub were based on the understanding that Jay-Dub was "a synonym of Jonathan Wilde, and the robot Jay-Dub as equivalent to that person, Wilde. The robot Jay-Dub has been accepted without demur these many years as none other than Jonathan Wilde – Jay-Dub, in short, *is* Jonathan Wilde!" (231). He suggests that any coincidence in their names is merely that, a coincidence. Jay-Dub is thus declared by the court to be a "self-owning mechanism" based on this control over his body. What interesting in this passage is that the court's decision is based upon a precedent set by the transactions of others with Jay-Dub. Because a bank and insurance company both conducted business with Jay-Dub as a person and thus an autonomous agent, the court ruled that those interactions constituted confirmation of his personhood.

MacLeod's narrating of this scene reminds us of Moravec's contention that humans will treat machines that act like humans as if they are human, but it also challenges Newitz's contention that the marketplace dehumanizes, or makes monstrous, those who come into contact with it. Granted, MacLeod's New Mars is an anarchist state, where capitalism operates free of the kinds of social and legal constraints placed on it by the kinds of capitalism that exist in our contemporary culture. However, MacLeod's novel also suggests that capitalism unshackled from the constraints of social and legal constraints might be unsentimental enough to see past the rhetoric of what is human and what is not, to judge the question on the basis of action and social interaction rather than appearance.

Posthuman Thought Experiments

Just as *The Calcutta Chromosome* imagines transformation as a key component of a posthuman existence through the exchange of genetic material, *The Stone Canal* presents the reader with posthumans embodying various combinations of artificial and “natural” features, inviting the reader to contemplate how those components make one human or not. The novel’s epigraph, drawn from Frederick Engels’ *Dialectics of Nature*, suggests that the human retains its character despite transformations:

we have the certainty that matter remains eternally the same in all its transformations, that none of its attributes can ever be lost, and therefore, also, that with the same iron necessity that it will exterminate on the earth its highest creation, the thinking mind, it must somewhere else and at another time again produce it.

For Engels, it is unimaginable that the thinking mind would ever disappear entirely from the universe. The bodies it is housed in, or the form it takes may change, but like the law of conservation of energy, the thinking mind will be conserved, somewhere.

In his lecture “Can Thought Go on Without a Body?” Jean Francois Lyotard echoes Engels’s sentiment that the thinking human mind is not tied to a particular kind of body. He proposes that if the right hardware was supplied to support our software (our mind), thought could go on without a body, or at least without the organic bodies that currently contain the mind. The failure of artificial intelligence to replicate human thought is only because it has not yet replicated the human mind’s ability to deal with ambiguous data. Humans are capable of meta-analysis of data in order to process that data; this is what makes human thought superior to computer intelligences (12-13). For Engels and Lyotard, consciousness is the marker of the

human, so that the body merely a container; for Engels and Lyotard, Jay-Dub is a conscious human subject despite having a robotic body.

However, Nigel Thrift suggests that intelligence is more complex than this; it is a product of the organism plus its environment, in which the organism is ‘extended,’ both spatially and temporally (465-67). The extended intelligence expresses itself in humans in our innate language processing, facial recognition and pattern recognition abilities that make us different from animals. Dee Model’s eerie feeling that she cannot be the same woman that Annette was arises from recognition that their environments and experiences are different, thus Dee Model cannot be merely a replica of Annette, but is a separate individual whose consciousness developed differently than the original. Dee Model explains how she awakened into to self-awareness after she downloaded more subroutines than she was designed to run, hypothesizing that it was “the animal body or the biological bits of brain” that spurred her to download so many extra tools (MacLeod 47).

The problem in the novel is that these competing visions of the human are embodied in different characters. Dee Model represents Thrift’s integrated vision of consciousness while Jay-Dub represents the Lyotardian vision of the mind that exists regardless of the body it is housed in. For Jon, it doesn’t matter what body he inhabits because his capacity for thought is removed from the physical conditions in which that thought makes sense. He says, “It’d be pretty bloody stupid of me to think I’m not thinking” (321) just because he inhabits a mechanical rather than organic body. His sentiment is similar to Lyotard’s declaration that “being prepared to receive what thought is not prepared to think is what deserves the name of thinking” (73). The ability to engage with the unknown by thinking about it (a function of mind) seems to be the primary

marker of the human or posthuman in *The Stone Canal*, regardless of the origins of that mind, or the kind of body it is associated with.

Today, with the advances in computing tools - tools that mimic some of the actions our minds are able to perform - we can imagine these tools outlasting our human bodies just like Jon Wilde's mind is able to continue on in both a robotic body and a cloned one after his death. Similarly, the final scene of *The Calcutta Chromosome* where Antar enters the virtual reality database also suggests that consciousness might continue beyond the deterioration of the body, in part due to our tools. Dee Model's declaration that feeling like a human is more important than whether or not she was created that way expresses a similar sentiment. What is interesting in *The Stone Canal* is that individual perceptions of self-awareness are less important than cultural expectations about the nature of the human.

In *The Stone Canal*, the people of New Mars arrived either by traveling through the wormhole fully incarnate, or were stored in computers to be subsequently downloaded into bodies cloned from sample cells. Within that culture, those who download into their new bodies quickly develop a prejudice against the robots that brought them to New Mars so that Dave Reid warns Jon Wilde not to put off downloading himself into a cloned body for too long because "there's a bad attitude spreading about robots. The people who've been downloaded are the main instigators of it. They tend to draw a very sharp line between people and machines. In fact a lot of them will deny there's such a thing as machine consciousness" (320). In the New Martian political climate, the disembodied mind within a machine may be clever – looking and sounding like a human – but it is not granted the full rights of a human. This distrust of machines has arisen in this society because of the madness of the "fast minds," those people who uploaded their minds, merging them with AI that then ran much faster than organic human minds could.

In the end, the novel suggests that like Dee Model, those sentient beings – whether organic or machinic – that feel they are human ought to be granted such a status.⁸⁴ In Thomas Foster's discussion of Macleod's trilogy in *The Souls of Cyberfolk*, he compares those who remain human instead of downloading their minds into computers to Native Americans and other colonized people. Certainly in the texts discussed here, the struggle between humans and posthumans might echo the struggles between colonized peoples and their colonizers. But as Foster points out, the problem with the analogy between remaining human in MacLeod's novel and colonial struggle is that it ignores the specificity of colonial struggle and "perhaps even makes it impossible to ask, one crucial question: What is the relation between actual colonized peoples and the project of posthumanism or resistance to it? What relevance does the debate over posthuman technological possibilities have for considerations of race and nationality?" (42) Foster's objection is important here – there is nothing in such an analogy that allows us to talk about marginalized or colonized peoples and their relationship (or resistance in Foster's terms) to posthuman technologies. But to be able to make an argument for the resistance of posthuman technologies by colonized others, it first is necessary to understand the general nature of the effects those technologies have on humans of all types. In this, analogies like those found in novels like MacLeod's help us work out what are some of the issues posed by posthuman technologies for humans in general. Understanding the general implications of such technologies seems a pre-requisite to then understanding their effects on marginalized or colonized peoples. The part of Foster's argument that does seem relevant is the critique of metaphorical constructions as inadequate to the project of aligning the posthuman with the history of

⁸⁴ Macleod dismantles the mind/body dualism as a means for defining the human in *The Stone Canal*. Similarly in the rest of the novel series, he employs alternate narratives – having different characters narrate the same events from different angles, as well as providing an entire alternate history in one of the novels – to show how fickle the historical path can also be.

colonialism because “that history of colonial struggle is emptied of its specificity” (ibid.), in the same way that the New Martian dictum that only organic minds and bodies are fully human ignores the specific experience of characters like Dee and Jay-Dub.

The humanist project to recognize all humans as equally deserving of the rights that in the past were only afforded to some of those humans falters in these novels when posthuman characters who feel as if they are human, ask for similar rights. In particular, the idea that a mind uploaded into a machine still has human rights is contested throughout MacLeod’s novels. As Foster suggests, in *The Stone Canal* and other novels of the series, “the association of the human value on freedom with the machinic value on functionality is particularly striking as a challenge to the humanist distinction between people and machines” with the conflict in which posthumans/machines must argue for their humanity mirroring the arguments groups of minorities have historically had to make to ‘prove’ their humanity (Foster 46). The minorities of New Mars have a different outward form than the majority of the occupants of the planet, and their struggle is the similar to the struggles that those who have differently-formed bodies from the majority have always faced.

Conversely, Mangala’s possession of the knowledge that allows her to transcend the limitations of the human body in *The Calcutta Chromosome* suggests that her marginal status in that culture allows her to change bodies through transmission of the Calcutta Chromosome with little consequence. Her position as an Indian employee of Ronald Ross means that her manipulation of bodies and consciousness remains unnoticed by the scientist. In New Mars, Jay-Dub and Dee’s struggles to change their bodies (and minds) take place in a higher profile environment, given their status and relationship to Dave Reid, so that their bodies function as a

kind of status symbol in New Martian society, and thus are worthy of notice by others within that society.

The emphasis in New Martian society on originality (organic bodies and minds originally emerging within organic bodies) defines the human as “natural” rather than artificial (as artificial intelligence or robotic bodies might be). This definition fails to accept that tools or prosthetics may supplement an organic human body without changing its humanity. The body of Jay-Dub and the mind of Dee Model are not the original, natural, organic components that the New Martians prize; however, each character acts or feels like a human.

The New Martian reliance on the organic as the defining feature of the human reflects Elaine Graham’s observation in *Representations of the post/human* that “technologies call into question the ontological purity according to which Western society has defined what is normatively human... [because] [n]ew technologies are often perceived as threatening bodily integrity, undermining feelings of uniqueness, evoking feelings of growing dependency and encroachments on privacy” (5). The focus in New Mars on bodily integrity (including the integrity of the ‘original’ ‘organic’ mind) thus suggests that humans are only ever born, not made (even the cloned bodies of the New Martians are based on organic bodies that were originally born). The emphasis on ‘the natural’ as the hallmark of the human in the novel privileges organic bodies, and minds that originated in organic brains as the only acceptable humans.

This emphasis on the original and organic is vividly narrated in the depiction of the posthuman “fast folk.” In *The Stone Canal*, Jon needs to figure out a way to download Jay-Dub’s mind back out of the robotic body it has been stationed in, and into a cloned, organic body in order to exercise his rights as a human being. Jon Wilde’s body is killed (a second time) in the course of the novel, so that Jon’s mind now occupies space within Dee’s mind, just as Meg

occupies Jay-Dub's body along with him. In order to be able to overcome Jay-Dub's inability to download his mind back into a cloned body, he must release the "fast folk" from their containment since only they know the method for doing so. As a form of nanotechnology, these fast minds are capable of rapid proliferation and in nanotechnology, this proliferation is referred to as the 'gray goo' problem, where nanotech might replicate so rapidly that it would eventually convert everything else in the world to 'gray goo' (Milburn 142). Jon lets the fast folk out of containment to help fix his problem, then wipes them out with 'blue goo' a kind of computer virus that 'polices' nanotechnologies like these fast minds, preventing them from replicating out of control and covering the world in 'gray goo.' Although the fast folk are portrayed as dangerous to Jon and other 'slow' humans, the novel never really answers the question of whether they are still human. If they are inhuman and malevolent, then their destruction might be justified in the same way that it is just to kill a horde of invading locusts (or the aliens that attack earth, if you are in a science fiction novel). But if they are indeed human, then their wholesale destruction via a biological/computational weapon is genocide and just one more example of one group with the power (Jon and other humans) using another group for their own means and then destroying them when they become a threat. The whole episode of the fast minds occupies less than a page in the novel but is worth repeating at length here to demonstrate how the novel addresses the issue:

"Wait a minute," said Tamara. "You're talking about implementing, what, thousands? of superhuman minds in smart matter, getting them to answer a few questions, and then *wiping them out?*"

Reid and I exchanged puzzled frowns, and at that moment I knew I'd won.

"Yes," said Reid. "What's wrong with that?"

There was plenty wrong with that, but we did it anyway.

...

The whole process took us the rest of that night – but then, we were all slow folk. When we had made sure we'd isolated the memory-stores, to repeat the exercise if necessary, we dropped the Blue Goo into the tanks where the fast folk lived. They didn't see it coming, and I'm sure they didn't feel anything.

“Standard computing practice,” Reid told Tamara and Ax. “Save the source-code, and blow away the object-code.” (334-5)

Tamara's objection recognizes that the minds stored within the computer might still retain their humanity. The narrator Jon's suggestion that “there was plenty wrong with that” is also never followed up with an explanation, serving to reinforce his own marginal status since, ironically, he undertakes the plan to activate and then deactivate the fast minds while he himself is still nothing more than a download in Dee Model's mind alongside hers.

What might be the most disturbing part of this scene is not only that Jon believes that the fast folk didn't feel anything, but that the humans made plans so that they could “repeat the exercise if necessary.” That the fast minds were once human is undeniable, and the suggestion that it was appropriate, and even good computing practice, to make sure their exploitation could be replicated seems callous in light of the struggles that Jon and Meg have undergone as disembodied minds themselves.

Dave Reid's control over the fast minds – having the codes that allow their reactivation – is clearly a case of those who control the means of production (the codes) controlling those who do the producing (the fast minds). In *Pretend We're Dead*, Newitz suggests that “by virtue of

their inability to exercise total free will and consent to their own actions, robots make the best public servants imaginable” (130). It seems that in New Mars society, by virtue of their inability to exercise free will, fast minds make the best repositories for lost knowledge as well. In the end, we might suggest that it is this notion of free will, or control over one’s own actions, that is the hallmark of the human. But if only autonomous beings are granted the rights of the human, this begs the question of the human because it is only those beings that can already exert autonomy that can then be included. Further, the ability to claim autonomy through exerting it can depend on the kind of body you use. Those who are controlled by others, whether that is other humans or the machines or computers they must rely upon for their existence, might then be excluded from the family of the human. It is this suggestion that dependence robs one of his or her humanity, regardless of how human one might feel, that unites cyborgs, clones and other posthuman figures with other subservient classes like slaves or even the subaltern in their exclusion from the category of human.

The Calcutta Chromosome and *The Stone Canal* are two science fiction novels that present us with posthuman figures that are more fundamentally different than humans like the clones of Ishiguro’s novel or even the transformative Saladin Chamcha in order to highlight how a difference in kind creates similar problems to a difference in degree. In Ghosh’s novel, the continuing consciousness of the characters who exploit the Calcutta Chromosome is enough to ensure their continuing humanity, at least as far as they are concerned operating at the margins of society. In *The Stone Canal*, a human mind that has been uploaded into a computer is seen in that culture as nothing more than an intelligent kind of virus that might need to be wiped out before it threatens humanity. The two novels also approach the importance of the body to the construction of the human differently, with Murugan and Mangala ready to relinquish their bodies in order to

transcend the limitation of bodily death, while Jon and Meg desperately work in MacLeod's novel to regrow the organic bodies they were born with in order to rejoin New Martian society as fully-functioning and autonomous human beings.

What each of these texts does offer is an opportunity to consider the kinds of values, ideals and beliefs that underlie our understanding of the human and who is included in those definitions. The question of which characters are human (or which ones are fully participating members of their society) brings into relief the poverty of the mind/body dualism to account for human experience, just as the distinction in New Mars society between mechanical (made) bodies and minds, and organic ones is insufficient to account for all the humans in it. Within the "what if" imperative of science fiction, we can see how constructions of the human in the context of posthuman technologies like cloning, artificial intelligence, or the biological personality transference of the fictional Calcutta Chromosome are complicated by the inadequacy of the mind/body dualism so characteristic of discussions of the posthuman, to account for lived human experience.

CHAPTER 5 A Natural History of Posthuman Science and Technology

Many assume that the posthuman world will look pretty much like our own - free, equal, prosperous, caring, compassionate - only with better health care, longer lives, and perhaps more intelligence than today. But the posthuman world could be one that is far more hierarchical and competitive than the one that currently exists, and full of social conflict as a result. It could be one in which any notion of 'shared humanity' is lost, because we have mixed human genes with those of so many other species that we no longer have a clear idea of what a human being is.

Francis Fukuyama *Our Posthuman Future: Consequences of the Biotechnology Revolution*

This chapter will describe Justina Robson's *Natural History* (2005), which presents the reader with characters that fight, love, explore, argue, and otherwise interact in ways that a twenty-first century reader would recognize, but because in this story humanity has mastered nanotechnology and biotechnology, it has been able to create custom-designed humans – the Forged – in order to transcend the limitations of the human body suited for survival on earth's surface. The Forged are human just like those who are not so designed, but their physiology and psychology have often been changed in ways that make them radically different from what we understand the human to be today. Robson's novel presents a world that is hierarchical and full of conflict, just as Francis Fukuyama suggests a posthuman world might look like. The extreme modification of the human body represented by the Forged offers a vivid portrait of a world in which humans

and posthumans each negotiate a space in which they can flourish. Ultimately, the novel seems to propose that when changes to the human form become too radical, it is no longer possible to consider such people in the same way as ordinary humans. Unmodified humans recognize that the Forged are a people; they just cannot seem to coexist together. The suggestion in the novel through the rhetoric of segregation and difference is that human and posthuman cannot co-exist. The discussion of Robson's novel will examine how manipulating the human form has the potential to replicate the prejudices and discriminations that humans have perpetrated upon each other in the past.

The Unnatural History of *Natural History*

In *Natural History*, humanity consists of: Unevolved humans (some of whom have enhanced themselves with a set of technologies called MekTek); the Forged, humans who have been genetically and mechanically designed for specific purposes or environments; and the Degraded, who as their name implies, are failed attempts to create Forged humans. The story is complex and the proliferation of bodies and types confusing at times, making it difficult to imagine the storyworld within. However, the story is included here despite such difficulties because it demonstrates the potential conflict between human and posthuman visions of a perfect world.

The story begins with Isol Voyager, a Forged human on a deep space exploration mission, whose body has been designed through a combination of gene splicing and cybernetic body parts to withstand the vacuum of outer space. At the outset of the story, Isol runs into space debris and is slowing bleeding to death when she encounters an alien technology that she labels "Stuff," which both heals her and transports her instantaneously across space with what she

assumes is FTL (faster than light) capability. The Stuff she takes into her body to replace her defective reactor core transports her to a planet circling Zia Di Notte that she claims for a new Forged homeworld. To facilitate Forged independence from the Unevolved on this new world, she recruits several other Forged, including Corvax, a Roc Handslicer, who has extensively refitted his body with illegal MekTek, and Ironhorse Timespan Tatresi, who is “member of the Independence Party and leader of the Solar Transport Workers Union” (17).

The Unevolved human military, represented in General Machen and the Strategos Anthony (a MekTek-enhanced Unevolved human), agrees to consider the Forged colonization of this distant planet on the condition they are able to send their own representative to inspect the planet. Professor Zephyr Duquesne, an anthropologist and Unevolved human, is sent with Isol to the planet to determine whether it is indeed unoccupied and thus appropriate for colonization. From space, there appear to be the ruins of cities, so following the rules of most space opera science fiction they need to determine that the planet is unoccupied before colonizing it.

Timespan Tatresi, spokesman for the Solar Transport Workers Union, in a meeting of the Forged Independence Party tells the assembly that two thirds of its members support Isol’s claim for a homeworld because “it would benefit future generations of human beings, in the Unevolved and Forged states alike, to have a homeworld far away from the beginnings of Earth and the Unevolved domination of our culture and practices” (211). It is in this language of segregation that we see how the intergroup conflicts of humanity’s past seem inevitable, even in a technologically advanced posthuman future.

'Old Monkeys' in *Natural History*

In *Natural History*, Unevolved humans refer to themselves as 'Unevolved' or 'Humanaforms' but the Forged often refer to the weakness of the original human body and mind as 'Old Monkey,' a moniker that emphasizes the evolutionary history of the unmodified human body. General Machen, an action man as his name suggests, provides one of the two Unevolved human perspectives in the novel, and it is through him one of the concepts important to the narrative, and to the construction of the posthuman, is focalized.⁸⁵ This concept might be characterized by the aphorism "beauty is in the eye of the beholder." In posthuman narratives, one of the things that distinguish posthumans from other humans is that they look strange or fantastical. For example, when Zephyr describes Isol's body, she thinks that Isol looks "like nothing more than a piece of stranded sea-junk: an assembly of spars jutting from a central core of black hide that was knobbed with peculiar outgrowths and pits" and that she "was as unrecognizably human as the most extreme class of Forged that Zephyr had seen in her life" (133).

But the two physical descriptions of General Machen within the novel, suggest that the strangeness of the posthuman is simply a function of the viewer's perspective. For example, when Zephyr first meets Machen, she sees him as "an unusually sturdy Unevolved, with the bullish frame that came from plenty of hard labour and tough, land-working genes, not unlike those of a Herculean Citizen. His skin was a modern-style ultra-melanin fast-tanning white, the kind that looked Mediterranean until a few hours' sunlight would cause it to blacken completely" (74). Zephyr's description highlights the genetic inheritance of the General, linking him back to a long history of humans, but it also compares his build to that of the Herculean class of Forged so

⁸⁵ 'Machen' is German for "make, do; manufacture; fabricate, prepare, produce, construct, form, create; cause, effect; constitute, amount *or* come to" (Cassell's), all descriptors that might apply to the work General Machen does in this storyworld.

that his connection both to Unevolved and Forged history suggests he might act as a kind bridge between the two. Comparing this description, focalized through Zephyr, with the description of Corvax's perspective of the same man, highlights how Zephyr's valorization of both Machen's "land-working genes" and similarity to Herculean Forged is simply one perspective. When Corvax, a Forged Roc Handslicer meets Machen, we are told "Corvax had forgotten what Unevolved looked like close to: soft, tiny and weak. Machen's skin was the colour of cheap white plastic that'd been exposed to too much heat and had browned to the verge of disintegration. The General was so small, too, smaller than Zing's spacer frame with its overgrown bones. He was like a toy that Corvax might use for demonstrating the features of basic biomechanics to one of his patients who'd come in for a change" (194). In Corvax's encounter with the man, he focuses on the ways in which the Unevolved human's body falls short of the abilities of a Forged body. And instead of Zephyr's use of the ethnic/geographical descriptor "Mediterranean" to describe his skin tone, Corvax compares it to manufactured "cheap" plastic that has been exposed to heat beyond the limits it was created to withstand, emphasizing the artificial nature of his "modern-style ultra-melanin fast-tanning white" skin. From Zephyr's perspective, the General is first and foremost a human, just one whose genetics have been modified to withstand intense sunlight. For Corvax, the General is a creature who falls short of Forged abilities and whose modification makes him like a cheap plastic toy, simply mimicking the superior abilities of the Forged.

We are introduced to Zephyr Dusquesne as she is telling a student that throughout human history we have held an attitude that "slaves are people who do not exist legally. They are also people whom one does not need to care about as if they are real" (55). She then suggests to the student that some political extremists consider the Forged the slaves of the modern age (within

the novel). The Forged are human, but because they appear different, like “machines or monsters” they are often treated by the Unevolved as not human. Zephyr “didn’t know if it was lack of imagination or a more deeply coded bias that made it so” but either way, the Forged are viewed as subhuman by many Unevolved in the novel (101). The Forged represent the extreme ends of what might be envisioned as a spectrum of human form and ability, ranging from disability to enhancement. The Forged are both constrained by their embodiment and freed from the limitations of Unevolved human body composition, and in being presented this way, they embody many of the social and cultural problems that such variation might create.

Body Modification and the Unevolved Humans in *Natural History*

It is not just the Forged whose abilities are augmented by technology. In *Natural History*, Unevolved humans developed MekTek in order to facilitate their interaction with technologies in similar ways. Thinking about his own MekTek, Corvax recognizes that MekTek “was principally an Unevolved product - the brute cybernetics of machine and AI spliced to their feeble bodies and brains to enhance capacities too ecoprecious to have been butchered together like a Forged mind. And too small to cope with a Forged consciousness” (16). MekTek is a prosthetic technological fix designed to compensate for feeble and small human minds and bodies.

MekTek Strategos Anthony’s MekTek implants allow him to access information and communication systems, two vital functions in advanced military operations. As Zephyr observes him during their first meeting, he is described as an “adapted Unevolved human, capable of belonging to either side” of the Forged/Unevolved human divide (67). MekTek allows Anthony to augment his innate intelligence with integrated artificial intelligence (AI)

technologies. He is able to read a data chip via a connection just below the surface of his skin (49) and when he analyzes the data the only hint that he is more than human (aside from the MekTek gleaming at the surface of his skin) is a blink “as the several AIs running alongside his natural mind finished communicating with him” (50).⁸⁶ When Zephyr interacts with Anthony or any of the Forged, she often feels that she is out of her league because she has no bodily enhancements, a fact that reinforces the text’s narrative of posthuman conflict between enhanced and unenhanced humans.⁸⁷

Anthony is like Zephyr in that he is an Unevolved human, but the skin of his head and palms is covered with metal and silicon in a “delicate lace copper fretwork of MekTek, inscribed with patterns that looked to her very like tribal New Zealand art” (68). Thus the MekTek that Anthony wears is not just functional; it also signals his human heritage. The MekTek on his skull is arranged in the pattern of a Maori tattoo, which he tells Zephyr is part of his genetic heritage. The tattoo is traditional, but he is not, in his words, a “purebred,” so that “some people think I shouldn’t have it at all. Lack of sufficient cultural credits in the pedigree,” a reference to a system of gene/meme inheritance that the Unevolved have developed in order to classify

⁸⁶ Kevin Warwick, a researcher at the University of Reading, implanted a chip into his arm that allowed him to control electronic switches and equipment in his vicinity. In a 2000 article in *Wired*, he suggests that implants linking people to machines “seems a natural progression, a potential way of harnessing machine intelligence by, essentially, creating superhumans.” Warwick further argues that just as humans split from their ape cousins in biological evolution, humans will need to compete with “intelligent machines” in order to avoid becoming a “sub-species” of “second-class citizens.” Interestingly, in *I, Cyborg*, Warwick suggests that Robert Louis Stevenson’s *Jekyll and Hyde* was one of the texts that first generated in him an interest in studying the function of the brain that led to his work on artificial intelligence and implants (9).

⁸⁷ In Robson’s novel, Strategos Anthony’s body modification is an enhancement, however contemporary body modifications tend more often to be therapeutic. For example, the cochlear implant, a therapeutic device designed to allow deaf individuals to hear, demonstrates how social and cultural norms that pertain to the human body vary with a community’s relationship to those norms. The cochlear implant has not been as widely adopted as physicians had predicted, not because the technology was feared, but because the Deaf community was a social community, not a group of people defined by hearing loss, so that “writing deaf history, like black history or working class history, commonly has an emancipatory objective. The cochlear implant has come to be conceived by deaf intellectuals and their hearing allies in terms of this new historiography of deafness” (Blume 47). What the cochlear implant rhetoric and counter-rhetoric does is point to how we construct ideals of human bodies. For otologists and physiologists who supported and developed the cochlear implant, the technology was a therapeutic one. For the Deaf community, the cochlear implant was a tool of oppression, seeking to alter their humanity. The technology itself was neutral; its benevolence or potential for harm is in the eye of the beholder (or perhaps in the ear of the listener).

themselves in the same way that the Forged are defined by the Forged Class systems (68).

Anthony's choice of how to arrange the MekTek on his body reflects the genetics of his organic body, while the social trend of classifying themselves according to such inheritance is a back-effect of Unevolved humans' classification scheme for the Forged.

The Forged understanding of themselves as an oppressed segment of humanity is the literary expression of the problem of difference in the posthuman: the distinctions between the human and the posthuman, the Unevolved and the Forged, machines and men, or humans and animals are all a problem of boundary crossing that relies upon essentialized visions of the doctrine of Form and Function that the Forged of *Natural History* are so eager to transcend.

Engineering Forged Bodies and Minds

The Forged humans in *Natural History* are humans whose bodies and minds combine organic and mechanical components according to specific design specifications in order to perform specific jobs. As hybrids of the organic and the mechanical, they challenge our notion of the human because the "tight coupling" of flesh and machine in the cyborg discomforts (Haraway "Manifesto" 152). As Thomas Foster suggests, "when technology does in fact 'become me,'" by being incorporated into the body, it opens "the boundary between self and world" (10). *Natural History* invites us as readers to contemplate what remaking humanity might look like. In order to understand a remade human body, it must be contrasted with the 'natural' or wholly-organic original form of the human body.⁸⁸ This connection between organic and mechanical is

⁸⁸ The notion of being "remade" is taken to extremes in China Miéville's Bas-Lag novel series. In *Perdido Street Station*, the Remade are a group of individuals who have committed some kind of crime, often political, whose punishment is to be fitted with all manner of bizarre mechanical prostheses, which identify them physically for their crimes. One storyline in the novel follows the shameful search by a winged Garuda for a prosthetic replacement of

reinforced in Alison Muri's declaration that "the cyborg is not *like* a machine; nor can it be defined through automata or unprogrammed prosthetic devices or gender boundaries. The cyborg *is* an organic machine that is steered or governed by a homeostatic mechanism" (19). This unity of organic and mechanical is cybernetics itself (as the command and control of an organism through homeostasis), achieved by "altering bodily functions... by suitable biochemical, physiological, and electronic modifications of man's existing *modus Vivendi*" (Clynes and Kline 29). Designing the Forged at the biochemical and physiological level make them poster children for Clynes and Kline's cyborg.

The difference between the engineered bodies of the Forged and the original frailties of the wholly organic human body is seen in an episode where Corvax, a Roc, Handslicer Class Forged enters the virtual reality platform Uluru, to experience what it is like to be an Unevolved human. Covax finds human bodies dull, with reduced sensory inputs from what he is used to as a Roc, and he has difficulty dealing with the smell and proximity of so many humans in the simulation, being designed himself for solitary work in outer space (112-13). He experiences the adrenaline rush of a fight or flight response when he is shoved on the street and he experiences "more pain than he'd known a small body could contain" when beat up by other youths at the settlement centre (114). As he endures the beating, he thinks "[the pain] violated a law he'd assumed existed in all animals, where once a certain level of hurt came into being then neural function would simply give up and shut off. But that was Roc design – or else, unbelievably, he hadn't reached its threshold" (120). When out of frustration at the limits of the human body, he demands Tupac, the Forged running the simulation end it, she replies, "these are your people.

his lost wings, a marker of transgression since his wings were severed in punishment for a crime. Thus in Miéville's storyworld, the purely biological though alien bodies of its citizens are valued in many cases for their lack of prosthetic enhancement.

And you are their dream: Forge-made, the best they could do. A little humility wouldn't kill you, you know" (114).

What Corvax's experience in Uluru as an Unevolved human suggests is that human embodiment and situatedness are crucial to the socialization of humans into their culture.⁸⁹

Similarly, Katherine Hayles declares that the body is critical to development of the posthuman:

If my nightmare is a culture inhabited by posthumans who regard their bodies as fashion accessories rather than the ground of being, my dream is a version of the posthuman that embraces the possibilities of information technologies without being seduced by fantasies of unlimited power and disembodied immortality, that recognizes and celebrates finitude as a condition of human being, and that understands human life is embedded in a material world of great complexity, one on which we depend for our continued survival. (5)

Robson's vision of the posthuman seems to deliver Hayles' vision of technology that understands that humans are embedded in a complex material world: Corvax's learning period in Uluru while his fully formed adult Forged body is being prepared is founded on this same idea that part of what makes humans human, is their ability to interact with the environment through their embodiment within it.

The bodies of the Forged are created from machine components, human DNA, and the DNA of other species in cases where the unique features of those species will provide the Forged with an advantage over an Unevolved human in the same situation (59). They do not arise out of a spontaneous or natural evolution of the human; they were created for specific purposes using a

⁸⁹ Similarly, epigenetic robotics presupposes that embodiment and learning to interact with the environment with that body is necessary to the development of artificial intelligence. Thus epigenetic robots are "embodied systems "which 'perceive,' 'act' and 'learn' (by artificial means) in interaction with the environment in which they are situated, and thus might be argued to develop their *own, observer-independent* representations and intentionality" (Ziemke). The theory of epigenetic robotics is that intelligence requires three properties: embodiment, situatedness in an environment, and prolonged epigenetic development. Humans require embodiment and situatedness in order to develop, and human intelligence arises from the third component: the extended childhood the human undergoes.

wide range of technologies. Although they may have abilities that transcend the Unevolved, as deliberately created creatures they were designed to serve, and the power imbalance between these two groups has generated an Independence movement within the Forged ranks.

The Forged are designed and created within the original Forged, the Pangenesis Tupac, called “Blessed Mother-father” by her Forged children. Tupac “was an enigma: machine, animal, plant, person. She ate sunlight. She supported life in her flesh and redigested what carcasses came with equal enjoyment and care. She breathed energy. She vented nothing, a perfect recycler” and in such efficiency and productivity, she is an unrivalled marvel of engineering, even in a novel in which human bodies are manipulated in amazing ways.⁹⁰ An examination of the passage where Zephyr meets Tupac will demonstrate the way such biomechanical engineering might take place, as well as the kinds of attitudes that might develop in the wake of such technologies. As Zephyr approaches Tupac in orbit around the Earth, the Forged who is “the world’s most popular modular soft toy for the under-fives” also reminds her of a “chthonic god” with her enormous bulk and array of ports, openings and grasping arms (132). Zephyr’s discomfort at entering the body of another living being dissolves when Tupac addresses her, and she admires “anyone who could speak individually to their own parasites.” Entering Tupac reminds Zephyr that life takes many different forms so that as she runs her tongue over her teeth, she can’t help “feeling guilty about it” for the first time as the action kills millions of innocent bacteria (133).

⁹⁰ I realize the problem in referring to Tupac as “she,” but in this I am following the lead of the text. This passage of course reveals how gender might be used in ways that are not as progressive as the technologies in the society in which it is constructed. The text’s assignment of the pronoun “she” to Tupac, even though Tupac is described as “blessed Mother-father” no doubt reflects Tupac’s role in creating new Forged. The novel does hint that the blueprints for Forged are created and controlled by the Unevolved humans, with Tupac playing the role of incubator and childhood educator. Although the novel does attempt gender-neutrality in Tupac’s honorific, in function, Tupac fulfills traditionally female roles in the gestation and early education of her progeny. It is an example of Form and Function realized through the lens of gender roles.

During Zephyr's tour of Tupac, her response to the engineering marvels she sees there is worth including in its entirety, since in the passage, Zephyr links the technological feat of designing and producing Forged humans to the long history of the species:

They walked along the viewing gangways that led over huge engineering works where MekTek and InerTech were manufactured by AI and robot and through warrens where flesh and metal seemed inseparably entwined in a mutual love affair – their final fling expressed in the outer skins of the million vats where the biological elements of new Forged were growing. Zephyr, entranced, thought of Bolivian jungles full of hidden gods, of the rose-red city of Petra in its secret chasm, of the surge and tide of life over the years coming to this place, all the time coming here without knowing where it was going – to this marvel, this being's single capacity for the creation, and re-creation, of so much. She was speechless. (133)

Zephyr's admiration of Tupac's generative properties, and vision of her as a chthonic god, mystifies the process of Forged creation, aligning it with the natural processes of life – that is, evolution – in the long history of human species. But it is precisely this connection to the human species that the Forged Independence movement wishes to sever. As Isol explains it, her desire for a new Forged home planet is in part to escape “the shackles of Solar DNA” to give the Forged “a future of self-development, free of the bonds of Form and Function” (162). Needless to say, Zephyr finds Isol's talk of escape from DNA “weird” since for Zephyr, DNA constitutes the entirety of her body's “blueprint,” unlike Isol's integrated biological and machine components.⁹¹

⁹¹ Tupac's engineering abilities lie far beyond humanity's current abilities, but not beyond the promise of nanotechnology. As it exists currently, nanotechnology is primarily theoretical, but the promise it presents is what Colin Milburn calls “nanovision”: a “fault line marking the trace of the inhuman within the human, of the future within the present, of the impossible within the possible” (16). Nanotechnology, as its name suggests, is a

What happens in Tupac's engineering works, and what Isol wishes to escape, is based on a prevailing metaphor in genomics of DNA as a blueprint or instruction sheet for creating a living organism. But this metaphor threatens to reduce the human to the information contained within its DNA, to imagine, as Donna Haraway criticizes, that the "human *is* itself an information structure, whose program might be written in nucleic acids or in the artificial intelligence programming language called FORTH" ("Universal Donors" 352). Imagining humans as information structures rests on two assumptions: "first, genes matter and are responsible for important aspects of who we are. Second, many of the influences our genes exert are straightforward enough to identify and select or rework" (Stock 42). Critics suggest that this kind of genetic reductionism could lead to the commodification of life, ignoring the "intrinsic worth" of a species, including humans. But as Robert Loftis notes, the notion of "intrinsic worth" depends upon an argument of naturalness that "assigns special moral status to an entity because it is natural," a claim that is only sustainable by drawing a distinct boundary around those species: "this is only a problem if one assumes that the species boundary was sacrosanct to begin with... one only can believe this if one perceives [there is] something special about human nature as it is given" and not that it is a result of evolutionary pressures (71-2). Isol's desire to be freed of the "shackles of Solar DNA" clearly demonstrates that even though she shares a genome with Zephyr, she feels no affection for, or affiliation with, Unevolved humans. For Isol, being human is more than just sharing DNA with other humans.

production technology that will create assembly processes at the level of the individual atom. As Milburn explains, "nanotechnology dreams of engineering every aspect of our material reality, precisely fashioned and designed at the limits of fabrication, one atom at a time.... For if nanotechnology enables us to program matter as we would program software, then the world itself can be transformed" (6). The engineering vats and processes in Tupac's interior would only be possible with the kind of precise fabrication that nanotechnology makes possible. Certainly, the description of Corvax's adolescence in Uluru while "his adult body grew on in the dark, silent depths of the Pangenesis Tupac's embryoblast, and was later melded with engineered components in order to do work that biology alone could not" would suggest that something like nanotechnology would need to be part of the production process (107).

As we see in *Natural History*, this extended and extreme intervention into human genetics creates a split in that storyworld between those who are modified, the Forged, and those who are not. Ronald Green warns of this very situation in “Last Word: Imagining the Future” when he suggests that over generations of this kind of inequality, the relationship between enhanced humans and humans who have not been genetically modified could potentially be strained beyond the point of recognizing each other as members of the same species (101-2).⁹² Robson’s novel seems to sound this same warning against deliberately creating genetically distinct human species.

The Forged Doctrine of Form and Function

The primary difference between the Forged and the Unevolved has developed into an ideology of Form and Function (referred to in the book as the F-word): “it was an old argument, the unwinnable one, Pinocchio’s dilemma, existential catastrophe. If you were made for a purpose then you have a reason to exist. If you exist and have no purpose, what is the point of you?” (70). The doctrine of Form and Function provides a reason for living beyond the more naturalistic arguments of, say Darwinian evolution, and survival of the fittest. Having been designed for the lives they lead, the Forged following of the doctrine provides a rationale for their adaptability to different environments, particularly those that Unevolved humans cannot enter. Thus the Forged “devotion to Form and Function as a sustaining faith was an adaptation to their lives as sterile

⁹² Similarly, Bill Joy, chief scientist and co-founder of Sun Microsystems suggests that if “we were to reengineer ourselves into several separate and unequal species using the power of genetic engineering, then we would threaten the notion of equality that is the very cornerstone of our democracy” (“Why the Future Doesn’t need Us”). The risk of separate species arises in part because contemporary genetic and nanotechnologies are controlled by commerce, which could lead to a case in which some nations or people have the technologies and some do not. The warning about the commercialization of technology can also be seen in Mehta and Goldberg’s description of nanotechnology as an industrial and political “power tool” that through patenting could shut out some nations from benefiting from its development (“In Search of Nanoscale Economies”).

workers” and a growing collective recognition that the Old Monkeys were not worth their efforts anymore gives rise to a desire for a Forged homeworld where the Forged “could make a new beginning and forget their origins and the experience of mingled pride, shame and puzzlement that went with it” (70). It is this hope of a homeworld that has led Isol to embrace the alien technology that threatens to take over her individuality.

Not all the Forged believe in the doctrine of Form and Function; the Passenger Pigeon Aurora (Ironhorse AnimaMekTek) criticizes the doctrine as irrelevant. She tells Zephyr:

Clinging to Function is a puritan ideal.... Not all of us care for such simplistic ideology. Form is likewise irrelevant; only what you can contribute to the lives of others should be the measure of a soul’s value. I didn’t choose to be Ironhorse Class, as I know you didn’t choose to be short, female or black, Dr. Duquesne. (71)

Aurora suggests that contributing to others or to society is the way to measure a person’s worth, because no one fully controls their form. The description of Zephyr Dusquesne drives the point home, since her mentioned attributes – short, female, black – are all physical attributes that are not highly valued in our cultural moment. Zephyr Dusquesne’s distance from an “ideal” human form suggests she is someone through whom we as readers can begin understand the human-ness of the alien-looking Forged humans of the novel.

The problem that the Forged have with Form and Function is that it imposes limitations. Occupying minds and bodies designed for a specific purpose means that they cannot easily undertake new purposes or inhabit new spaces. For example, when Corvax volunteers to examine the new alien technology, the only way for him to enter the human-sized lab is by having his wings removed. He creates a disability deliberately in order to interact with the others, but his examination of the Stuff translates his consciousness is into the eleven-D that the Stuff

occupies. Once there and occupying the same conscious space as countless other minds, he realizes “the whole issue what shape you’re in is really much more trivial than I thought” (293). Even losing his wings in order to enter the laboratory is no longer a trauma since he has transcended the limitations of the body in his translation into the Stuff.

Not only do the Forged often find it difficult to occupy new spaces, but when they are created for one job, and one job only, and that job disappears, they become obsolete. During the Independence Party meeting, the plight of the two Terraform Forged, Gaiaform Bara and Gaiaform Asevenday Kincaid, is mentioned as a particularly egregious limitation created by the Form and Function of the Forged. The Gaiaforms, created to terraform Mars and the Moon, were “monsters of another era, capable of moving mountains, drinking seas, planting continents, exhaling entire weather systems” all controlled by a single mind and personality (83). But when they were finished with those tasks, they were put into hibernation. They had been “created with the promise of a long life and work, but prevented by their very form from enjoying any kind of existence outside the purity of mere Function” (214). The Gaiaforms themselves want to be useful, as much as their Form and Function will allow, but they also want liberation from Form and Function for all Forged. When Tatresi is sent to awaken them and transport them to the new homeworld to begin terraforming, Bara tells Tatresi they wanted to wait to be awakened till “there was a place for everyone, regardless of their Form or Function – or lack of it. A natural world with no reason but the fact of being behind it” (88). Tatresi defends the project to terraform the world orbiting Zia Di Notte with the argument that the Forged who relocate there “can learn, and liberate ourselves from the bondage of Form and Function, if we study what [the former inhabitants] left behind” (89).

The Herculean making the arguments about the Gaiaforms during the Independence Party meeting declares that “to deny Isol’s claim [to a new homeworld] is to agree with these people being thrown on the scrap heap and forgotten, despite what they’ve done for us” (215). Counter arguments that their lifespans were improperly calculated and should have been made shorter, followed by rebuttals about artificial lifespans and “Unevolved guilt over the fate of Forged who had died or been lost due to poorly understood engineering,” begins a scuffle that results in the arrest of several rowdy members of the audience (215). The conflict mentioned in this brief passage expresses many of the fears expressed by contemporary writers about the possibilities and perils of posthuman technologies, including the potential damage by errors made during development of technologies that will affect those on whom those technologies are practiced.

The Forged attitude toward Form and Function is that at least in some cases, it amounts to a kind of slavery. The Gaiaforms are only the most vivid example of the kind of social isolation that slavery produces. Tatresi’s speech during the Independence Party meeting explicitly links the condition of the Forged to slaves, declaring “either Earth must grant us the freedom to pursue our own reproduction and design, equal in rights, or they must be discarded as the slave traders and commodity brokers that they are” because the Forged “exist in cultural poverty, designed and fabricated to lead lives of restricted experience and social deprivation in comparison with the hominid populations, who enjoy a full and varied animal life in addition to their functions as employees, workers and philosophers” (218). To this speech another meeting members quotes Marx and the means of production, leading to the rebuttal that some inequality is natural because

Forged were never designed to be merely sentient machines in the way that so many of them seem to delight in thinking, in order to fuel their anti-hominid fury. Wasn’t it the case that human society in the past has always been divided between those who manage

and those who labour? Some division of labour must exist to get the job done at all.

Society has never been homogeneous. Herculeans cannot fly. Hominids cannot survive space. Jovian Vaporetti cannot till the land and create food. (219)

This vision of harmony despite difference in form draws upon social and economic constructions of class that have informed human experience particularly since the Industrial Revolution which created the conditions Marx identified and which are alluded to above. Given the classification systems of Forged Classes, and the Unevolved imitation of those kinds of systems based on genetic heritage, this kind of argument does not seem out of place in the storyworld of *Natural History*. However, the deployment of class systems, regardless of whether they are celebrations of heritage or the shackles of Forged Class Form and Function, also draws attention to the discrimination that such classification schemes – whether of posthumans or contemporary humans – can produce. The response of an Unevolved government official to the proposition of a Forged homeworld is to remind the audience that “separation from the Forged is purely a racist and divisive manoeuvre, a falling-back to the positions of the early twenty-first century where national, religious and cultural divisions were allowed to stand as barriers to trade, rights and the fair distribution of wealth” (217).

It is this accusation of the past transgressions of one group of humans towards another that echoes in both Robson’s novel, and in the rhetoric of posthumanism. Ray Kurzweil, prominent proponent of posthuman technology suggests that the limitations of the human body will be transcended so that “we will gain power over our fates. Our mortality will be in our own hands. We will be able to live as long as we want” (9). This technological determinism makes that event seem inevitable. But what that technological development would look like is what concerns others. One has the sense that Francis Fukuyama in his warning against unconditional

acceptance of posthuman ideals is thinking specifically of Kurzweil when he writes that “many assume that the posthuman world will look pretty much like our own.... But the posthuman world could be one that is far more hierarchical and competitive than the one that currently exists, and full of social conflict as a result” (218). Of course, the “coulds” of Fukuyama’s statement are no more or less likely than the positive vision proposed by Kurzweil. Because there is no way of knowing for certain whether a posthuman world would be utopic or dystopic, advocates suggest that there is no reason not to allow the technological advances that would herald its arrival.⁹³ A similar argument is made regarding the Stuff of Robson’s novel, since until one is translated into the eleven-D that it occupies, one cannot know whether the move is a good or a bad one. What the novel does demonstrate fairly unequivocally is the damage that conflict between two groups: the Forged, who desire independence, and the Unevolved who do not want them to leave, can wreak. In its analogous relationship to any of a number of other human conflicts between different groups, it is hard to assign blame to the technology alone for the grief caused.

Making Mistakes: Degraded Human Forms

With every positive vision of a posthuman future populated by human beings seamlessly integrated with their technologies in a body-transcending utopia, there is a darker vision of a future in which humans are degraded by their technologies. In *Natural History*, in addition to the

⁹³ Similarly, in biotechnology, there is often the argument made that manipulating our genome is unnatural which is countered by proponents of genetic engineering who question why natural selection, which has modified human genomes throughout our evolution, is a better arbiter of what humans should be than conscious human choice through the deliberate manipulation of the human genome. Certainly the observation that humans are as much a product of their culture as there are of their biology would suggest that modifying human biology is hardly different than the age old practice of modifying our cultures.

Unevolved and the Forged, there is a third class of humans: the Degraded. As their name suggests, the Degraded are less than ideal, being failed visions of the Forged. The animosity that Isol feels for the Unevolved is similar to the animosity that Gritter, a Degraded class Ornith-form feels toward both the Unevolved and the Forged. The conflict between the Forged and the Unevolved over territory leaves the Degraded marginalized, officially part of the Forged independence movement, but also despised for their lack of human characteristics and monstrous bodies. The Degraded classes are described in the novel as “production errors” of illegal breeding programs or failures in the process of creating Forged whose various features do not merge into an effective (and aesthetically pleasing) form.⁹⁴ Corvax describes Gritter as a “cousin” who “had been conceived as a wild-analogue eagle, intended to assist with the rediversification of the natural world on Earth and to act as an *in situ* scientist, but who had come out of the mould a disagreeable, self-interested little bastard, more reptilian than he should have been and twice as scheming as the stats had originally indicated” (35). As a Degraded, Gritter’s form as an ugly “self-interested little bastard” translates to having no clear function within either Unevolved or Forged culture.

The language of the Restitution fund for the Degenerate makes clear the imperfect nature of Gritter’s existence: “*We did not strive to make lower, only higher, than ourselves. But, once in a while, accidents happen. For those of us not as fortunate as others, give generously to the Restitution Fund*” (220). Even Corvax, another Forged, expresses pity, summarizing Gritter with the epithet: “All great plans had their failures” (35). The Degraded do not function as they were

⁹⁴ The text hints that some Degraded forms are the result of Forged attempts at procreation, since all Forged are created through the Pangenesis and are thus sterile (71). Other hints suggest Unevolved humans are producing Degraded in the attempt to develop intelligent pets. At one point Gritter meets a Dog which had “clearly been intended as a pet, but had received some unexpected *in vitro* upgrading, and instead of a smart long-lived poochy life-companion for a rich old fart with no children, a monster had been produced: human IQ and the body of a gargoyle” (220).

intended. They have unattractive physical appearances, and often suffer from reduced capacity to speak or move because of the disabilities of their deformed bodies. Gritter's head is described as an "ugly scarlet lizard head, with its plates of microcrystalline tegument that made it look half-armoured" (46), nothing at all like the eagle that Gritter was supposed to resemble. Similarly, another Degraded Ornith is described as "tumbl[ing] off the perch with the grace of a potato sack" but upon spreading his wings "instantly becoming a creature of speed and beauty" (47), an indictment of the unnatural experiment to merge the graceful avian form with the heavy MekTek and antigravity primary feathers needed to support the human mind within that body (46). Even in its failures, the Forged are defined by both form and function.

What Robson's novel demonstrates in its exploration of the doctrine of Form and Function, and its presentation of various posthuman bodies accompanying the conflict that arises between humans and posthumans, is that the posthuman figure in literature can perform many functions. Narratives about producing (and reproducing) posthumans, whether those posthumans are understood as radical departures from human norms, as the Forged are, or as simply new means of categorizing other humans, as we see in the clones of Ishiguro's novel or in Saladin Chamcha's radical metamorphosis, offer writers a way to explore the multi-faceted nature of human identity itself. For British writers in particular, the legacy of imperialism and colonization has generated debates about what it means to be "British" and who is able to wear that label, particularly in the twentieth century as the empire began to fragment. As the phrase, "more English than the English" repeated in Smith's novel suggests, it is sometimes an outsider's view of the nation that best describes a national character. Similarly, the view from the margins of literature might also be the best way to see what literary representations of posthumans – like cyborgs and clones – look like.

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